REPORT RESUMES

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CONTRACT DOCUMENTS AND PERFORMANCE SPECIFICATIONS.

FIRST CALIFORNIA COMMISSION ON SCH. CONSTR. SYSTS.

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A SET OF EDUCATIONAL SPECIFICATION DRAFTED BY THE FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS GIVES INFORMATION ON BIDDING PROCEDURES, A DESCRIPTION OF THE CURRENT CONSTRUCTION PROGRAM, PROCEDURES FOR SUBMITTING A PROPOSAL, DATA AND CONDITIONS RELATED TO THE DEVELOPMENT PHASE OF THE PROJECT, COMPONENT CONTRACTS, AND GENERAL CONDITIONS AND PROCEDURES. PERFORMANCE SPECIFICATIONS ARE OUTLINED IN TERMS OF STRUCTURE, HEATING, VENTILATION, COOLING, LIGHTING-CEILING AND INTERIOR PARTITIONS. ALSO INCLUDED ARE MATERIALS--COST MATRICES, CONSTRUCTION TIMETABLES AND ADDENDA TO THE SPECIFICATIONS. (GM)

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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ED018958

CONTRACT DOCUMENTS AND PERFORMANCE SPECIFICATIONS

JULY 1963

SCHOOL CONSTRUCTION SYSTEMS DEVELOPMENT

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

750 Welch Road, Palo Alto, California DA 2-1550

MEMBER SCHOOL DISTRICTS

Sacramento City Unified School District
1619 N Street, Sacramento 10, California

San Juan Unified School District
3738 Walnut Avenue, Carmichael, California

East Side Union High School District
4600 Alum Rock Avenue, San Jose, California

Santa Cruz City High School District
133 Mission Street, Santa Cruz, California

Santa Cruz School District
133 Mission Street, Santa Cruz, California

Simi Valley Unified School District
1725 Deodora Street, Simi, California

Excelsior Union High School District
17923 S. Pioneer Boulevard, Artesia, California

La Puente Union High School District
350 N. Hacienda Boulevard, La Puente, California

Glendora Unified School District
440 W. Foothill Boulevard, Glendora, California

Fullerton Joint Union High School District
1000 N. Lemon Avenue, Fullerton, California

Huntington Beach Union High School District
1902 - 17th Street, Huntington Beach, California

Placentia Unified School District
16312 Golden Avenue, Placentia, California

San Dieguito Union High School District
540 N. Highway 101, Encinitas, California

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July, 1963
Bid Copy

PART 1. INFORMATION TO BIDDERS

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

PART 1. INFORMATION TO BIDDERS

CONCERNING THE PROJECT

The Commission is an agency organized under California law by a group of local school districts interested in a project for the development of a new method of school construction. The objective is an integrated system of standard school building components which will

(1) offer architects desired design flexibility in meeting the changing program needs of individual schools,

(2) reduce the cost of school construction and give better value for the school building dollar in terms of function, environment, first cost and maintenance, and,

(3) reduce the time needed to build a school.

The School Construction Systems Development Project has been carried on as a joint activity of the School Planning Laboratory of the Stanford University School of Education and the Department of Architecture of the University of California at Berkeley under a grant to Stanford from Educational Facilities Laboratories, Inc., a non-profit corporation established by the Ford Foundation to assist American schools and colleges with their school plant problems. Throughout the development phases of the System, Project personnel will continue to render technical advice and services to the Commission and will serve as the primary liaison with industry.

Functional specifications have been developed for several major components of the System. These are Structure; Interior Partitions; Heating, Ventilating and Cooling; and Lighting-Ceiling; and, in addition, specifications will be developed for other components to be bid later. The interested school districts, acting through the Commission, invite bids on the development, supply and installation of these components in a program of school construction which will produce an aggregate computed floor area of not less than 1,400,000 sq. ft. and not more than 2,400,000 sq. ft. These schools are to be ready for occupancy between September 1966 and December 1967. The schools included in this program, their location and probable size, and the estimated construction date of each are set forth in Part 2.

The areas for the schools listed in Part 2 are, in general, computed in accordance with the California State School Building Aid Law of 1952, as amended; refer to the Education Code, State of California, 1961, Chapter 10, Division 14. The listed areas for schools in the Sacramento City Unified District and the Fullerton Joint Union District are somewhat greater than would be obtained from the School Building Aid Law. These computations and areas are used to derive the "aggregate computed floor area" mentioned in this section.

GENERAL BIDDING PROCEDURE

The developmental nature of the Project has made necessary certain variations of the usual practices in bidding on school construction in order to assure industry of a satisfactory market for new products and in recognition of the fact that present commitments are sought for deliveries to be made after completion of a development and testing program. The legality of the Commission and of the bidding and contracting procedures which it has adopted have been reviewed and approved by the regular legal advisers for each of the participating school districts.

Bids will be received by the Commission for the benefit of the member school districts. The lowest responsible bidders will be designated by the Commission and their bids shall constitute irrevocable offers to the school districts, which may be accepted by individual school districts not later than June 30, 1965, and commitments to the development and testing program which is more fully explained below. It will be a condition of the obligation of any contractor selected pursuant to this procedure that not later than June 30, 1965 it shall have received firm commitments from the member school districts for components required for an aggregate of not less than a computed area of 1,400,000 sq. ft. of school construction. Provision has been made for escalation of bid prices.

All contracts for the purchase and installation of building system components, materials and equipment will be made on an individual basis between each school district and the successful bidders. No school district will enter into any such contract until it has obtained authorization of the funds required to carry out the construction in connection with which such contract is to be made.

Bids shall be submitted on a lump sum basis for the minimum volume of construction. In certain cases where components must work together, related bids will be taken on more than one component category. Unit prices for the various components will not be required until a later date, and they must be calculated in such a manner that their application will not yield an aggregate price exceeding the lump sum bid. In order to assure bidders uniformity of obligations to the individual school districts, standard forms of contract and general conditions will be employed. These forms are included as Parts 5 and 6 of this contract. Bidding Sheets are included in each category of the Performance Specifications, Part 7 of this Contract, and are also available at the office of the Commission.

Each component contractor will sign separate contracts with the respective school districts. The construction of each school will therefore require the coordination of the efforts of several component contractors. In order to maintain construction schedules, it is necessary that component contractors abide by the delivery and installation schedules established by the general contractor, who will be selected in the usual manner by each district for all work not included in the component contracts. Accordingly, the Contract and General Conditions provide that component contractors will work under the direction of the general contractor for each school and will be paid on the certificate of such general contractor as to satisfactory progress and completion.

LETTER OF INTENT

In order to achieve the desired objective of an integrated system, it is apparent that component proposals must be related. For example, mechanical systems must be related to specific structural configurations. To facilitate this integration of effort, interested bidders are required to submit a letter of intent to bid which shall include a statement of the manufacturer's qualifications to do the proposed job, including previous experience in developing components of the general type and category required, and list the names and qualifications of available personnel who will be involved directly in the development work with Project personnel. The letter of intent must be filed with the Commission or postmarked not later than August 1, 1963. Submission of a letter of intent will not create any obligation to bid, but bids will not be accepted from contractors who have not submitted such letter of intent. The names of all those who submit letters of intent will be promptly furnished to all who have done so. This procedure is being followed to encourage the development of related component proposals.

PRELIMINARY PROPOSALS, EVALUATION, FINAL BIDS

To facilitate necessary evaluation and development work, the bidding phase of this project has been subdivided. The first step was initiated on July 18, 1963 by the publication of the Notice to Contractors advising that performance specifications for the major components of the system are available to prospective bidders. Not later than September 2nd, 1963, intending bidders shall submit for evaluation a proposed method of solution. This shall consist of a complete written description, including drawings or photographs, of the proposed method of meeting the performance specifications. Sufficient information should be furnished to permit a valid appraisal of the system to be made by the Project, its advisory committee and independent consulting engineers. The Commission reserves the right to call for additional information as necessary to complete its evaluation of the proposal. No prices are called for at this stage of the procedure.

The second step will be an evaluation of the proposals submitted by the intending bidders. This will be completed not later than October 1, 1963. During the evaluation period, the Commission may wish to discuss various aspects of the proposals with their respective authors. All exchanges of information during this period between the Commission and its consultants and any prospective bidders will be kept confidential. Evaluation reports may include suggestions to individual bidders directed toward accomplishing components integration and development of components to satisfy performance specifications.

Priced bids shall be submitted by October 31, 1963. Bids shall also include certain detailed information about the component category being bid upon; needed information will be specified by the Commission.

On or before November 29, 1963 the lowest responsible bidders will be designated by the Commission and the Commission will advise all bidders promptly of the action taken on bids. The Commission will consider the lowest responsible bidder or bidders for any category or combination of categories to be the lowest bidder or combination of bidders whose proposal best responds in quality, fitness and capacity to the particular requirements of the proposed work.

SPECIFICATIONS, FORM OF BID

Performance Specifications (Part 7) for the component categories designated as "Structure", "Interior Partitions", "Heating, Ventilating and Cooling", and "Lighting-Ceiling"constitute Part 7 of this Contract.

Bidders shall carefully examine the specifications, both before submitting their proposed methods of solution and after any revision of the specifications in the light of the Commission's evaluation of such proposals. Bidders shall satisfy themselves as to the sufficiency of the specifications and shall not at any time after the submission of the bid dispute or complain of such specifications or the directions explaining or interpreting them or assert that there is any misunderstanding with regard to the location and nature or the minimum and maximum amount of work to be performed. The location of each of the school sites is listed herein, and lack of familiarity of conditions at the building sites will not be considered as an excuse for failure of or delay in performance.

Bidders are expressly notified that no deviation from the specifications will be allowed.

Bidders desiring explanation concerning any portion of the work during the time of estimating may obtain the same by making application in writing to the Commission, provided that such requests for explanation shall be placed with the Commission at least fourteen days before the date set for the submission of the bids.

Shall a bidder find discrepancies in, or omissions from, the specifications, or shall he be in doubt as to their meaning, he shall at once notify the Commission; and, if necessary, a written addendum will be sent to all bidders. The Commission will not be responsible for any oral instructions or interpretations. Addenda, if any, shall be incorporated in the bid and shall become a part of the contract documents. Failure of a bidder to receive any addendum shall not release the bidder from any obligations under his bid, provided said addendum was sent by registered U.S. mail to the address furnished by the bidder in the Letter of Intent.

No bid will be accepted from or a contract awarded to any party or firm in arrears to any of the member school districts, or who is a defaulter as surety, contractor or otherwise.

All bids shall be made in the form of the Proposal (Part 3) and the Bidding Sheets which are a part of the Performance Specifications (Part 7). Additional copies of these forms may be obtained upon request to the Commission. Bids which are not submitted on these forms will not be considered by the Commission.

Bids shall be delivered to the Commission at 750 Welch Road, Palo Alto, California, on or before 4:00 p.m., October 31, 1963. Bids shall be enclosed in a sealed envelope bearing outside identification of the bidder and the category or categories of the work bid as shown on the index page of the Performance Specifications for each component type.

The specifications for a component category indicate the range of products required, together with the quantity or volume for each product type established for the purpose of determining the successful bidder. The bid shall be a lump sum bid for delivery and installation of the components at sites of the several schools included in the program and for the quantities required to accomplish the construction of schools having the minimum aggregate computed floor area of 1,400,000 sq. ft.

Bidders will observe that the Performance Specifications for Structure and for Interior Partitions include bidding sheets for unit prices applicable to specific quantities and sizes of component members. These bidding sheets are included at this time for the information of bidders. They shall be completed and submitted to the Commission by successful bidders not later than July 1, 1964.

Bids may be submitted for one or more component categories. Bids may be submitted by single companies, groups of companies, or a single company representing a group.

Different bids may be submitted for a given category to allow for its relation to other categories. For example, a mechanical system bid may differ according to which structural system it relates to. If more than one price is submitted for any component category, the prices shall be in separate bid proposals. All bids shall relate their products to other component categories. For example, if a mechanical bid will not work with any of the structural systems being bid it will be disqualified. The converse is also true.

Bidders in one category may receive sub-bids from bidders in other categories, prior to submitting a group bid for more than one category. For example, a structural bidder may receive sub-bids from mechanical and electrical bidders and himself submit bids for three component categories.

Related bids for the combined structural, mechanical, and lighting-ceiling categories are being requested; and also related bids for major types of interior partitions. Contracts will be awarded on the basis of the total price for these related bids. For details, see the bidding sheets.

Each bidder shall write out the total amount of his bid, in addition to inserting the same in figures. All bids shall be clearly and distinctly written and submitted without erasures or interlineations. If any bid is presented erased or interlined, it will not be considered by the Commission.

In case a bid be submitted by a corporation, it must be signed in the name of such corporation by a duly authorized officer or agent thereof.

The Commission reserves the right to reject any or all bids and any or all items or alternates or propositions of such bids. If no acceptable bid is received, the performance specifications may be altered and re-bid, or the portion of the work for which no acceptable bid was received may then be accomplished by conventional procedures.

DELIVERY REQUIREMENTS

Delivery and installation of the components will be required between June 1965 and December 1967. Schedules for such delivery and installations shall be agreed upon between the component contractors and the general contractor for each school in consultation with the District Architect.

In his preliminary proposal submitted for evaluation, each bidder shall give an estimated time for the delivery and erection of his equipment for one complete school embracing all requirements of the performance specifications and assumed to be 150,000 sq. ft. floor area. This time estimate will be revised in accordance with experience on the mock-up building and will be used by the general contractor in developing his time schedule.

BID BOND, WITHDRAWAL OF BIDS AND OPENING OF BIDS

Each bid must be accompanied by a bid bond in the form procured from the office of the Commission, duly executed by the bidder as principal and by a corporation authorized to do business in the State of California as surety naming the Commission as obligee, or by a cashier's check or certified check, certified without qualification, drawn on a solvent bank of the State of California or on a national bank doing business in the State of California in the amount of 5% of the lump sum bid and payable to the Commission. Not later than July 10, 1965, each successful components bidder shall execute contracts in the form of Part 5, with the member school districts which on or before June 30, 1965 shall have accepted the offer made by the bid, provided that the aggregate requirements of such districts shall be at least equal to the minimum quantity bid upon, and if any successful components bidder fails to execute contracts as herein provided, the proceeds of said certified or cashier's check or the amount paid by the bidder or his surety pursuant to the terms of said bid bond either voluntarily or pursuant to the judgment rendered by the court in any action brought thereon will be retained by the Commission as agreed and liquidated damages because of such default and not as a penalty therefor. Such default on the part of a bidder shall automatically cancel the notice of his designation as one of the component contractors for the project. Upon execution of the contracts herein provided for, or failure of the member districts to accept the bid for the minimum quantity requirement, the certified or cashier's check or bid bond of each successful bidder will be returned to him.

The certified or cashier's check or bid bond of each unsuccessful bidder will be returned to him immediately following the designation of the successful bidders. If all bids are rejected, the certified or cashier's checks or bid bonds of all bidders will be returned to them immediately following such rejection. In either event, such deposits will be returned within thirty (30) days from the date set for the submission of bids, except as stated below.

No bidder may withdraw his bid for a period of thirty (30) days after the time set for the submission of bids and the Commission will act upon all bids within that period of time.

Bids will be opened and read at the time and place set forth in the advertised Invitation to Bid. Bidders or their representatives and other interested persons may be present at the opening of bids.

TARGET COSTS

A comparative cost analysis has been made of schools previously constructed in each district which is a member of the Commission. From an analysis of these costs, target figures have been established above which all bids will be rejected. No single component category will be permitted to subsidize any other.

TAXES

The price bid shall include any federal, state or local tax payable on articles to be furnished under the contract. The bidder shall make his bid on the basis of cost of materials less the Federal Excise Tax on said materials. The Districts will furnish the contractor with exemption certificates to be used for such materials as are ordinarily subject to Federal Excise Tax.

DEVELOPMENT PROGRAM - MOCK-UP BUILDING

Development of the system will require a mock-up building program to test the components to be supplied by the successful bidders. The costs of the mock-up building program are to be borne by the component contractors, who also shall furnish necessary quantities of the components to be supplied by them. The conditions applicable to the development phase of the project are set forth in Part 4.

PROPERTY RIGHTS IN SYSTEM

Any and all property rights in the building system as such and in the name "SCSD System" shall be vested in the Board of Trustees of the Leland Stanford Junior University. It is understood that it is Stanford's intention to make such system available generally for use in school construction, royalty-free. The name "SCSD System" may be used only with Stanford's permission.

ESCALATION

The Engineering News Record Building Index (ENR) will be used to determine escalation of unit prices. The bid price for the Component Contract will be related to the ENR Index for the month in which bids are received by the Commission. This price shall be adjusted in an amount proportionate to the change in the ENR Index between such date and the month prior to the month in which the bids are received by the districts for the general contract for each individual school. The maximum time between receiving bids for the Component Contracts and bids from the general contractors will be three years. Review of the National ENR Index over the past three years shows that it has moved from 555 in March 1960 to 586 in March, 1963, a rise of almost six per cent (6%). In order to relate the cost of the various components to California State Aid allowances, it is necessary to set an upper limit for escalation, and this limit shall be six per cent (6%). The maximum escalation shall be included in the bid price, both in the lump sum bid and in all unit prices to be submitted, but contract prices shall reflect the adjustment for actual performance of the ENR Index as hereinabove provided.

IDENTIFICATION OF SUB-CONTRACTORS

Section 4102 of the California Government Code requires that any person making a bid on the construction of any public work or improvement shall set forth in his bid or offer

> "(a) The name and the location of the place of business of each subcontractor who will perform work or labor or render service to the general contractor in or about the construction of the work or improvement in an amount in excess of one-half (1/2) of one per cent (1%) of the general contractor's total bid.
>
> (b) The portion of the work which will be done by each subcontractor under this act."

Since the successful bidders in this case will be required to hold their bids open until June 30, 1965, a period of more than a year after submission of the bids and will be making delivery and installation of their components at an even later date, the Commission and the School Districts recognize that in many instances it will be impracticable to designate sub-contractors at the time of submission of bids. Accordingly, any bidder may include in his proposal advice to the Commission that it is impracticable for him to designate sub-contractors at the time of submitting the bid and that if he is designated one of the successful bidders he will furnish each School District with the information required by Section 4102 of the Government Code upon receiving written advice from the District that it is prepared to accept his offer.

OUTLINE CALENDAR

May 3	1963	Notice of Intent to take bids. Performance specifications available in component categories: Structure Heating, Ventilating and Cooling Lighting-Ceiling Interior Partitions
July 18	1963	Publish Notice to Contractors on above mentioned categories. Project begins work on other component categories.
August 1	1963	Letter of Intent from manufacturers.
September 2	1963	Evaluation submission.
October 1	1963	Final date for returning evaluation to manufacturers.
October 31	1963	Final bid submissions, first 4 categories.
November	1963	Successful bidders to be nominated.
November	1963	Successful bidders begin working with Project.
April	1964	Mock-up building out to bid (or negotiation).
May	1964	Mock-up building construction begins.
August	1964	Mock-up building construction completed.
September	1964	System completed, with all testing performed on mock-up. Details submitted to architects.
June	1965	Manufacturers begin supply of components to building sites.
June 30	1965	Last day for Districts to accept component proposals.
September	1966	First project buildings ready for occupancy.
December	1967	Last project buildings ready for occupancy.

Note: Bids for other components will be required on this calendar, approximately December, 1963.

BACKGROUND INFORMATION CONCERNING THE SYSTEM

The system will consist of a majority of the building components that are used from the slab up, including structure, enclosure, and services. The system will aim to obtain efficiency in the use of industrially produced building components by standardizing on a selected range of components which offer a reasonable basis for mass production to industry and sufficient design freedom for architects.

The completed system shall consist of a description of all the components, including technical data, calculations, detail drawings, and assembly drawings as required by SCSD.

The system encompasses only the major components of a school; the school itself will be designed by the District's architect and consultant engineers as at present. The effect of the system will be to reallocate the architects' and consultant engineers' time on a project; however their status and relationship to the District remain unchanged. Time which is currently spent choosing structural and mechanical systems, and much of the time spent on working drawings may now be devoted to programming, more detailed preliminary design, and other planning work of more immediate value to the District. Consultant structural, mechanical, and electrical engineers will still be responsible for the specific engineering of the individual schools, choosing from a range of components already selected by competitive bidding under the system. Unit prices will have been determined for these components.

THE PROGRAMS OF EDUCATION

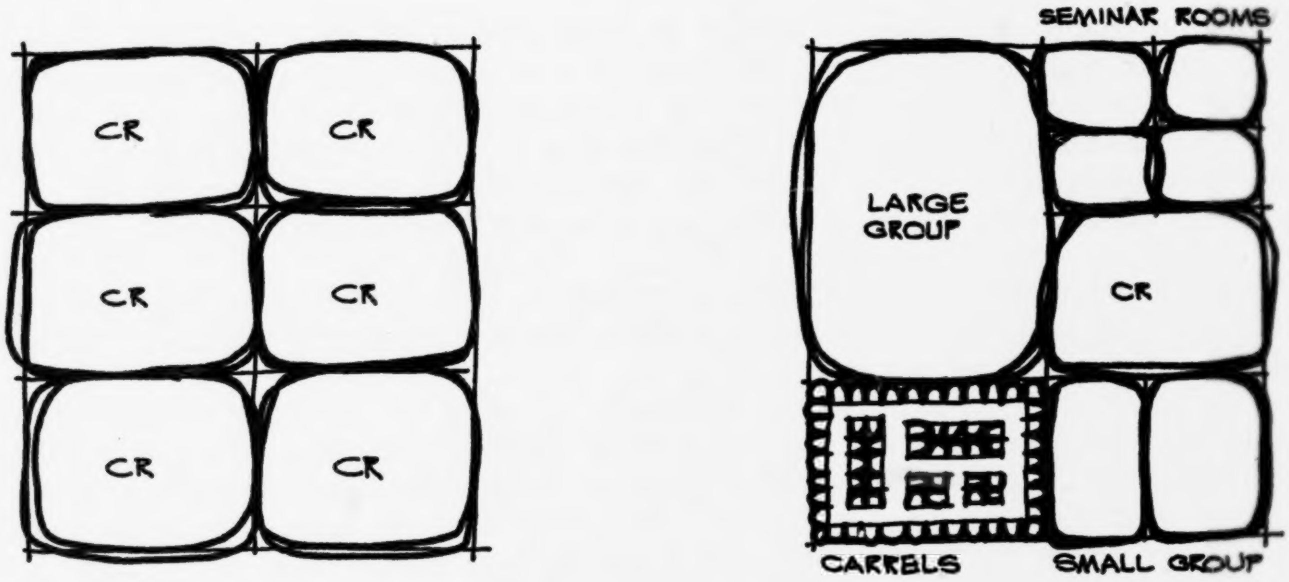
Criteria for the component categories have been derived from educational needs. (Project personnel have discussed program needs with the school officials and the architect of each district.) Three principal requirements emerge:

(a) A variety of campus plans must be possible. Some districts favor one or two very large "loft" buildings, with many rooms. Other districts wish to construct a great many small buildings, or to have sub-school units form the campus pattern.

(b) As each district and its architect will wish to arrange the various teaching spaces differently, the building system must make it simple and economical to plan rooms of many different sizes and to arrange space in new ways. (See Figures 1 and 2).

(c) Increasingly, the districts are altering their schools after they are built, and the building system must be able to accommodate these changes as they arise.

Some district personnel and architects believe that large-group instruction is proving to be effective and will be used more and more as teachers learn the methods. In most cases, a maximum group size of 150 students will be required. Therefore, one must be able to change the academic areas of the school buildings to accommodate new spaces of approximately 3600 square feet, if the future demands it. Larger spaces will also be designed for specific purposes. These


CR
CR
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CR
CR
SEMINAR ROOMS
LARGE GROUP
CR
CARRELS
SMALL GROUP

Fig. 1. Two different ways to arrange space to form an English Department.

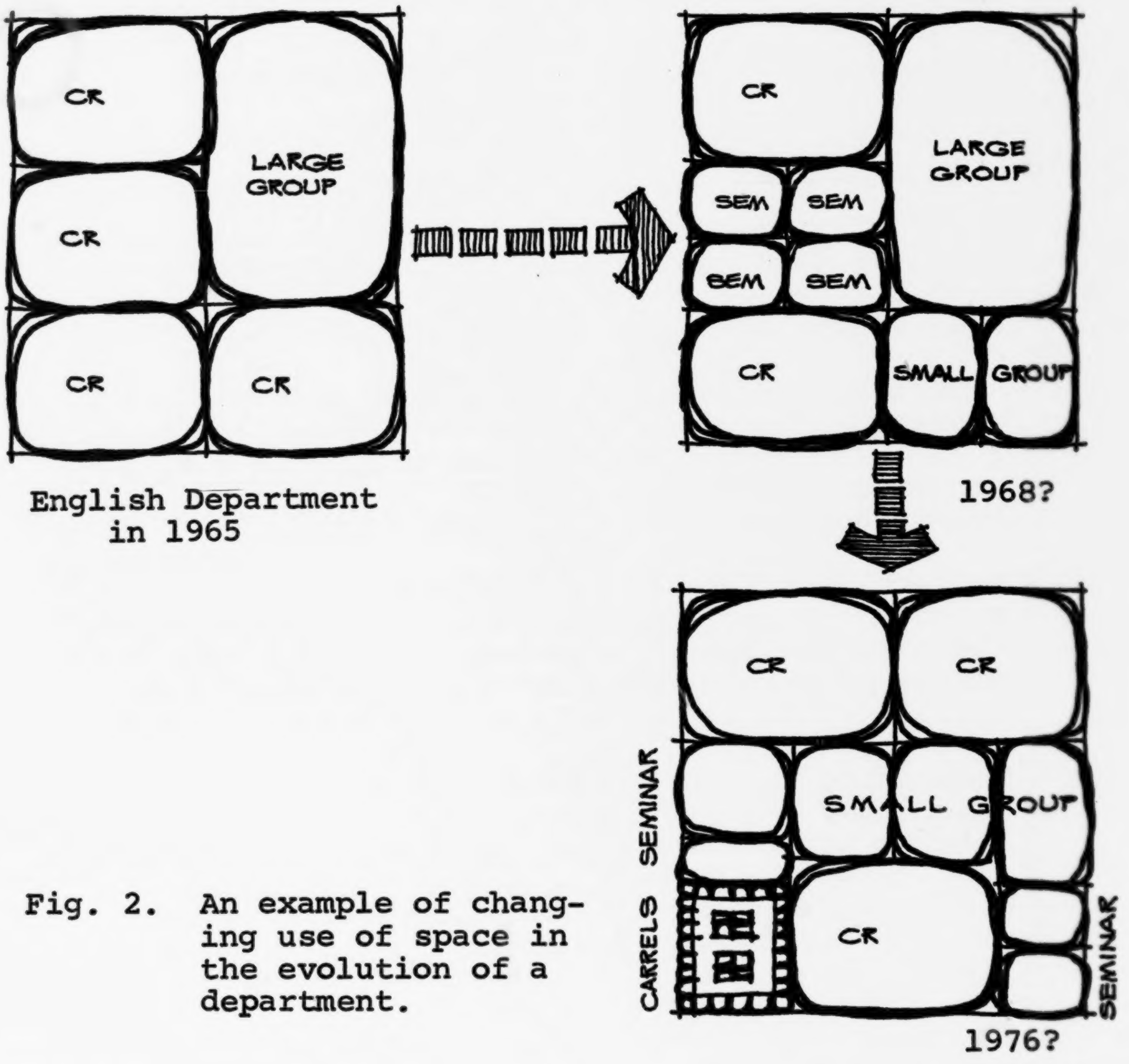
CR
LARGE GROUP
CR
CR
CR
English Department in 1965
CR
LARGE GROUP
SEM
SEM
SEM
SEM
CR
SMALL GROUP
1968?
CR
CR
SEMINAR
SMALL GROUP
CARRELS
CR
SEMINAR
1976?

Fig. 2. An example of changing use of space in the evolution of a department.

will be permanent spaces and not created by adding smaller spaces together. The shape and the height of the larger spaces must be appropriate to their educational use.

Many educators in the member districts believe that small-group instruction will come to the fore as new methods for scheduling students are developed. They see the need to alter the building in many places to create minimum spaces of approximately 450 square feet, requiring their separate sources of light and ventilation. Work-groups or discussion-groups of 10 to 15 students will use these spaces, and partial partitions might sub-divide the 450 square feet in various ways. These smaller spaces need not be provided with individual control of heat, light and sound.

In general, continuing changes in educational theory and practice provide a need for buildings which can respond to these changes. Thus, flexibility in use is seen as a prime requirement for the Project buildings. Flexibility does not mean that all school districts are committed to unconventional plan layouts. A flexible school can accommodate a conventional program: the converse is not true. If the schools are not to be outdated before they are built, they must have a built-in capacity for change.

EFFECT OF THE EDUCATION PROGRAM ON THE BUILDING PROGRAM

Educators and architects are struggling today to obtain an efficient organization of spaces for educational purposes, but columns and walls on the traditional 30-foot spacing tend to maintain the status quo. A note on the history of the California classroom is of interest:

> The classroom size in California began with the 20' x 20' wood frame room, a standard borrowed from the State of Idaho, some decades ago. The room became larger - 20' x 24', 20' x 32', 20' x 40' - always limited by the 20' wood span. As the room became too long and narrow to be useful, a way was found to increase the span to 24'. Then this itself became too narrow, but with the use of premium grade lumber and light steel frames, in the immediate post war decades, spans could economically go to 28-32', and these sizes were used.

The conventional school is largely an assemblage of these standard sized units - the "regular classrooms". Future schools will consist of larger spaces which will break down into various smaller spaces as required. Instead of one teacher and 30 children in a standard room, the room may vary from 1/4 classroom to 4 classrooms in size, the group of children from 1 to 150, and the number of teachers from none to 3 or 4. If this breakdown of the larger space is to be effective, it must not be constrained by the structure. Thus, a basic 60' clear span is seen as the next logical structural advance over present day 28'-32' spans. It will span two regular classrooms, and provide the necessary clear space of 3600 sq. ft. to service 150 students as well as a variety of smaller spaces.

Allied to the structural requirements of long-span are three additional factors which govern flexibility of use: the system for the interior partitions; the thermal environmental control of teaching areas; and the lighting system.

Within the fixed structural "umbrella", three types of partitions are necessary to achieve the educational purposes. Fixed partitions will be required around spaces such as toilets or mechanical rooms, and to conceal plumbing or act as shear walls. Demountable partitions, easily moved by school custodial help provide the basis for plan rearrangements. Demountable partitions currently available have been developed for office use and often have characteristics - such as minimum width - which are unnecessary for schools, and which add cost. At the same time, school wall surfaces are an important work area and the partitions must serve this purpose. Thus, the performance specifications reflect these particular needs and it is expected that new partitions will be developed by industry to meet them. Operable partitions, capable of immediate operation by hand, yet still possessing good strength and acoustic qualities, complete the partition system necessary to meet the needs of the educational program.

The thermal environment must remain comfortable as room sizes change. Full effectiveness of flexibility may occur best in a fully air conditioned teaching environment, and also in a space which is mechanically ventilated, where the space can be made independent of needs for cross-ventilation and operating sash, which restrict room configurations and introduce the vagaries of incontrollable climate conditions.

The thermal control system must be able to respond to varying space arrangements, created by movement of partitions, and it is no longer possible to call out in advance the precise configuration of each room in the building.

Similarly, the lighting system must retain its effectiveness as room sizes change. Due to recent research in the lighting field, the basic requirements for lighting, quite apart from flexibility, are very stringent, particularly in respect of allowable brightness levels. The effect of these criteria results in the necessity for light sources over a large percentage of the ceiling, ruling out many conventional lighting systems.

The educational program, then, yields four component criteria which at present are difficult to meet within the school budget. They are:

(1) long-span structures

(2) varied movability of partitions

(3) full thermal environmental control with the ability to adapt to changing plan configurations

(4) an efficient and attractive low-brightness lighting system, which adapts to changing plan configurations.

To meet these criteria in this project, and thus to fulfill educational needs for the future, it is felt that a method of design using an integration of components will be necessary.

INTEGRATION OF COMPONENTS

One of the results of the increasing complexity of modern buildings is the necessity for a high degree of coordination in the design of the components that make up the buildings. The earlier in the design process that this coordination begins the more effective the end results. For the success of this project it is important that coordination begin as industry starts to design the products rather than architects attempting to coordinate already designed products.

The major areas where coordination is necessary is in the ceiling "service sandwich" - the space between the ceiling and roof (or floor structure in multi-storied buildings) wherein are concentrated the main environmental services of the building. In the components that make up this "service sandwich" three orders or degrees of coordination may be seen:

(a) Coordination by architects and engineers of components performing separate functions, which have been designed without reference to each other. This represents the typical situation with building design today, wherein architects coordinate a variety of catalog building products and field erected materials.

(b) Coordination by architects and engineers of components performing separate functions, which have had some degree of coordination at their design phase. This represents the best situation in the building design process today, but applies only to the prestige or functionally organized buildings.

(c) Coordination of components at their design stage between architects and industry, wherein components perform other functions as well as their own. For example, structure may form or contain air ducts, and act as a light-reflector; light fixtures may perform heating functions.

Coordination of this third order results in component integration. It is this integration that is desired for the project. At this order, criteria which may be overexacting for components acting in isolation become feasible. A long-span beam which is uneconomic when used solely as structure may be economic when it is also designed to carry air. The depth needed for the long span, often a liability in a conventional building, may become an asset to be exploited in terms of carrying air or acting as a light reflector.

To implement the concept of integration, the following criteria shall be met by the service sandwich:

(a) The sandwich shall provide long spans from 55' to 75' with 60' designed as the most economical span. Maximum bay width shall be 30', with a maximum sandwich depth (from ceiling to top of roof structure or floor deck) of 36".

(b) The sandwich shall provide the capacity for carrying air to meet the needs of an efficient mechanical system. Provision shall be made for distribution of air to rooms, for removal or utilization of light fixture heat, and for return-air removal or reuse.

(c) The sandwich shall provide an acceptable minimum ceiling. While hung ceiling may be used, underside of sandwich should be capable of use as basic finished ceiling.

(d) The sandwich shall act as a reflecting surface for the lighting elements. It shall be possible to accommodate lighting elements within the sandwich, providing an adequate distance between lamp and reflecting surfaces or diffusing elements. The low-brightness requirements indicate light sources over a large percentage of the ceiling plane and tend to rule out conventional troffer type fixtures with high brightness characteristics. It is desirable that a variety of ways of meeting the lighting criteria be provided.

(e) The sandwich shall meet requirements for 1 hour fire protection. Sprinkler systems as a method of achieving this do not meet with the project requirements for flexibility.

(f) The sandwich shall act as roof deck.

(g) The sandwich shall provide for attachment of fixed, demountable, and operable partitions.

(h) The sandwich shall provide provision for running utility services.

GENERAL CHARACTERISTICS OF PROJECT SCHOOLS

As described above, certain physical characteristics of the schools will result from the education programs to be served. Other characteristics will be determined by building codes and state requirements.

It is anticipated that the schools generally will have:

(a) closely related buildings of simple, compact form with from 7200 to 40,534 sq. ft. per building.

(b) maximum area of 40,534 sq. ft. per building before a fire separation is required.

(c) liberal use of large overhangs for covered walks and sun control.

(d) limited use of glass in exterior walls.

(e) construction of type III or IV as defined in the Uniform Building Code, 1961 Edition, and State of California, Title 19.

(f) approximately 1-2% of the project area on second floor.

(g) flexibility of interior spaces - there will be considerable requirements to combine and divide teaching areas.

(h) extensive use of operable and demountable partitions to achieve this flexibility.

(i) a horizontal structural module of 5'-0" x 5'-0" and a horizontal interior planning module of 4" x 4".

(j) a vertical module for both structure and planning of 1'-0". Every increment of one foot will not be used.

(k) air conditioning to some degree:

    1) spaces where air conditioning is most likely:

        a. general academic

        b. administration and guidance

        c. science

        d. music

        e. multi-use

    2) spaces where air conditioning is less likely:

        a. physical education

        b. industrial arts

        c. food service

        d. miscellaneous spaces

(l) low maintenance characteristics

(m) slab on grade

(n) a seismic probability (or Z) of 3 as designated on the inside back cover of the 1961 Uniform Building Code.

PART 2: CONSTRUCTION PROGRAM

(Number of Pupils; Area in Square Feet)

Each of the School Districts expects to use the Building System components in the school or schools listed in this exhibit. An occasional change may be made necessary by shifts in population. It is intended that a district may add schools or may substitute other schools for those shown below, provided that the total construction area for that district is not reduced.

The School Districts are presently under the state-aid building program of California unless marked in the list by an asterisk (*).

District & Project	Total School		Completion 1966		Completion 1967		Other Completion[1]		
SACRAMENTO CITY UNIFIED*									
School #5	2000	210,000	2000	172,000			Auditorium may be separate - 38,000		
SAN JUAN UNIFIED									
Mesa Verde	2000	168,200	1000	84,100	1000	84,000			
EAST SIDE UNION									
School #7	1800	154,200	1800	154,200					
School #8	1800	154,200			1800	154,200			
SANTA CRUZ CITY HIGH									
School #3	1800	154,200			1000	78,000	800	76,200	'68
School	1800	141,400	600	43,800			1200	97,600	'68
SANTA CRUZ									
Elementary School	700	38,720	700	38,720					
Elementary School	350	19,360	350	19,360					
NORTHERN CALIFORNIA				512,180		316,300			

(1) Some of these construction projects may be advanced to 1967 and thereby added to Project volume.

District & Project	Total School		Completion 1966		Completion 1967		Other Completion (1)		
SIMI VALLEY UNIFIED									
School #2	2000	168,200	700	58,800	700	58,800	600	50,600	'68
Junior High School	1200	95,400	1200	95,400					
Elementary School	600	34,000			600	34,000			
Elementary School	600	34,000	600	34,000					
GLENDORA UNIFIED									
Junior High School	1080	86,040	1080	86,040					
LA PUENTE UNION									
School #5	2250	185,700	1500	123,800	750	61,900			
PLACENTIA UNIFIED									
School #2	1500	130,200			750	65,100	750	65,100	'70
Junior High School	1200	95,400	1200	95,400					
FULLERTON JOINT UNION*									
School #7	2000	172,000	1400	120,000			600	52,000	'68
EXCELSIOR UNION									
School #6	2000	67,200	800	67,200			(previous to 1966)		
School #7	2000	67,200	800	67,200			(previous to 1966)		
School #8	2000	168,200			1200	101,000	800	67,200	'68
HUNTINGTON BEACH UNION*									
School #4	3000	238,200			3000	238,200			
SAN DIEGUITO UNION									
School #2	1600	43,100	500	43,100			(previous to 1966)		
SOUTHERN CALIFORNIA				790,940		559,000			
TOTALS				1,303,120		875,300			
PROJECT TOTAL						2,178,420			

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(1) Some of these construction projects may be advanced to 1967 and thereby added to Project volume.

PART 3. PROPOSAL

First California Commission
School Construction Systems
750 Welch Road
Palo Alto, California

In response to the Commission's Notice to Contractors, dated July 18, 1963, and calling for prices on or before 4:00 p.m., October 31, 1963, the undersigned (A) has carefully examined the contract documents, which consist of Part 1 - Information to Bidders; Part 2 - Construction Program; Part 3 - Proposal; Part 4 - Information and Conditions Applicable to Development Phase of Program; Part 5 - Components Contract; Part 6 - General Conditions; and Part 7 - Performance Specifications for Category 6 - Structure, Category 7 - Heating, Ventilating and Cooling, Category 8 - Lighting-Ceiling, and Category 9 - Interior Partitions, and

(B) hereby submits this proposal to furnish to the School Districts which are members of the Commission the labor and materials and to perform the work specified, for the prices which the undersigned has inserted in the Bidding Sheets attached hereto and made a part hereof, subject to escalation as provided in Part 1, in connection with not less than 1,400,000 computed square feet of school construction pursuant to the program set forth in Part 2.

The undersigned agrees that, if it is designated by the Commission as a successful bidder within the time specified in Part 1 for such designation,

(1) this proposal shall constitute an irrevocable offer to the member School Districts which may be accepted by them, individually, at any time on or before the close of business June 30, 1965;

(2) it will enter into a contract with any member School District, in the form of Parts 5 and 6, when this offer is accepted by such School District; and

(3) it will cooperate with the Commission in the development and testing phase of the Project as set forth in the Invitation to Bid, particularly Part 4 thereof, and will furnish all materials and make all payments called for by the provisions applicable thereto.

As required by Part 1, and for the purposes and on the conditions therein stated, there is enclosed a bid bond/certified check payable to the order of the Commission in the amount of $______________.

____
(Name and quality of bidder)

By ________________________________
(Title of corporate officer or other individual executing proposal)

Dated ________________, 1963

at __________________________

Bidder's address:

____

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July, 1963
Bid Copy

PART 4. INFORMATION AND CONDITIONS APPLICABLE TO DEVELOPMENT PHASE OF PROJECT

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

PART 4. INFORMATION AND CONDITIONS APPLICABLE TO DEVELOPMENT PHASE OF PROJECT

GENERAL INFORMATION

The development phase of the project will include the mock-up building and testing program which is outlined below and shall be accomplished within the time allotted on the schedule. The successful bidders (hereinafter called "Component Contractors") shall commence development work within fifteen days after the Commission has designated them as the lowest responsible bidders. The development work will be carried out under the direction of the Commission, acting through Project personnel.

The purpose of the program is to develop the building components in detail so that School District architects may complete the design of project schools with full knowledge of the nature, performance and unit cost of the various components. The development work is to be completed by September 30, 1964, by which time each component contractor shall have produced components which meet the performance specifications as demonstrated by the mock-up building and testing program. After the documents comprising the building system have been accepted and approved by the Commission, no change shall be made in the design of building components except upon the written approval of such change by the Commission.

Each component contractor shall file a surety bond with the Commission prior to the commencement of development work. Said bond shall be issued by a corporation duly and legally licensed to transact business in the State of California, shall be issued at the expense of the contractor and shall be maintained by him at his expense during the entire development phase of the Project. Said bond shall be in the amount of not less that $50,000 and shall guarantee the faithful performance of the development phase of the project.

For purposes of this Part 4, a component contractor shall be deemed to have commenced development work when it has advised the Commission that the personnel assigned to the program are available for consultation on a regular basis with Project personnel.

During the development phase of the Project, all questions in regard to the interpretation of the scope or meaning of the specifications, shall be referred to the Commission, whose decision thereon shall be final.

TIME FOR COMPLETION - LIQUIDATED DAMAGES

The development work shall be performed in a workmanlike, diligent and expeditious manner. The component contractor agrees that said development work shall be finished by September 30, 1964 or such later date as the Commission for good cause may establish.

It is agreed that if the component contractor shall neglect, fail or refuse to complete the development work, testing, design of components and to provide required component drawings within the time herein specified, damage will be sustained by the Commission. It is now and will be impractical and extremely difficult to ascertain and determine the actual damage the Commission will sustain in the event of and by reason of such delay and it is therefore agreed that the component contractor will pay to the Commission the sum of $1,000 for each and every calendar day's delay in finishing the development work beyond the time prescribed herein or in any written extension thereof. Said amount has been deemed by the parties hereto to be reasonable and to approximate the amount of damages which would be sustained as a result of a delay in completing the development work as closely as the parties at this time can ascertain, and each component contractor agrees to pay said liquidated damages as herein provided.

The component contractor shall not be charged with liquidated damages because of any delays in completion of the development work due to unforeseeable cause beyond the control of and without default or negligence of the component contractor or, including, but not restricted to, acts of God or the public enemy, acts of the Commission, acts of another component contractor in the performance of its obligations to the Commission, fire, flood, epidemics, quarantine restrictions, strikes, freight embargoes, public riot, and unusually severe weather.

Within ten days from the beginning of any such delay, the component contractor shall notify the Commission in writing of the cause of the delay and the Commission, after ascertaining the facts and the extent of the delay, shall extend the time for completing development work when in its judgment the facts justify such extension.

COSTS OF DEVELOPMENT WORK

The components required for the mock-up building program and any additional materials needed for testing shall be supplied by the respective component contractors, each of whom shall pay the costs of testing his own products.

The Phase Two mock-up building, as described below, will be constructed under a general contract to be let by the Commission. The general contracting expenses shall be paid by the component contractors. The amount to be contributed by each component contractor shall be determined by applying to the total of said general contracting expenses the ratio of said component contractor's lump sum bid to the total of all component contractor's lump sum bids. Component contractors shall deposit with the Commission amounts estimated to be sufficient to cover such costs prior to the call for bids for the construction of the mock-up building, and such additional amounts as may become necessary if the contract price or actual costs of construction exceed such estimates.

It is intended that the maximum cost of the Phase Two mock-up building be $100,000, including components supplied by the component contractors and all costs of the general contractor.

The amounts so deposited will be placed in a separate construction account and the Commission will be obligated to pay the general contractor for the mock-up building only out of such account. Any balance balance remaining in said account after all claims for the cost of constructing the mock-up building have been paid or provided for will be returned to the component contractors in proportion to their respective contributions.

MOCK-UP BUILDING PROGRAM

The mock-up building program will be in two phases. Phase One includes the erection and testing of a rough working mock-up in any form necessary to solve problems arising during the development work. Phase Two includes the erection and testing of a final mock-up building of approximately 4,200 sq. ft. designed by SCSD and constructed on land made available by Stanford University at Palo Alto, California.

Phase One Mock-up

Location: any location, covered or uncovered, mutually agreed upon by the four major Component Contractors (structural, mechanical, lighting-ceiling, interior partitions). If agreement on site is not feasible, then the Commission will make the determination.

Size: sufficient to check the relation of major components. The mock-up need not be a complete, enclosed space. It may consist of portions of structure, enclosure, and equipment.

Purpose:
1. To assist in the solving of critical problems in relationships of structure and equipment.
2. To solve detail problems before system is too far advanced in development.
3. To provide an opportunity for testing and detail re-design with material which can be damaged, where finish and future use is unimportant.
4. To provide opportunity for SCSD to assess efficacy of system integration.

Phase Two Mock-up

Location: Site allocated by Stanford University, Palo Alto, California.

Size: Approximately 4,200 sq. ft. enclosed space; approximately 6,500 sq. ft. roof area. Program of building will represent typical adacemic spaces, plus toilets. Building will be one storey, and will be air conditioned. Long-span structure, 60' - 70' will be required.

Purpose:
1. To check the component system in detail at a prototype level in a well-designed and well-finished building.

2. To test components in relation to one another.
3. To test the lighting, acoustic and mechanical environment.
4. To present a visual check on the results of the system for participating school districts, manufacturers, district architects, and any other interested parties.
5. To exhibit the system.
6. To provide an example to general contractors prior to their bidding on individual schools.

TIME SCHEDULE FOR MOCK-UP BUILDING PROGRAM

Phase One Mock-up

Worked on by manufacturers	November 1963 - February 1964
Work Completed	February 1964
Testing and Reworking	February - September 1964

Phase Two Mock-up

Preliminary design completed	March 1964
Working drawings completed	April 1964
Out to bid or negotiation	April 1964
Bids received	May 1964
Construction begins	May 1964
Component Contractor delivering begins	June 1964
Building completed	August 1964
Checking of system details and visual effects	August - September 1964
Supplementary study and testing	September 1964 - September 1966
Building to be occupied by Stanford University	September 1966

Until December, 1967, the building can be used for continuing tests and demonstrations by the architects, contractors, manufacturers and SCSD, subject to the convenience of the occupant.

During the development phase of the project, the Component Contractor shall pay to have his products analysed and tested by an independent laboratory to assure the Commission that his components meet the requirements specified.

Much of the testing of individual component members _must_ have been completed _before_ erection of the Phase Two mock-up, or the system time schedule cannot be maintained. There will not be time for redesign of major component features between August and September, 1964.

Testing in the mock-up will be environmental testing of lighting, acoustics, and air distribution in characteristic spaces. Performance standards for lighting levels and brightness control, air velocity and patterns, temperature control and response of systems, ventilation and odor control will be tested. Acoustics in the field situation will also be tested.

As a result of such testing, minor changes may be made in component details before final production begins. Experiments and adjustments, particularly with mechanical systems, may continue beyond September, 1964 if desired. Useful experience in operating equipment may be gained which will reduce the adjustment period when the schools are completed.

TESTING

(a) All components are liable for testing to insure that criteria in the performance specifications are adhered to, and that state or other regulations and codes are complied with as outlined in the specifications for each Component Category.

(b) Testing to meet the performance specifications shall be by independent testing laboratories approved by the Commission; and the costs thereof sustained by the Component Contractor. The results shall be made available to the Commission and any applicable State Agencies.

(c) In the event that component manufacturers wish to bid items not yet sufficiently developed to be covered by codes and regulations, these may be acceptable provided they meet tests approved by the code authorities, and the costs thereof sustained by the Component Contractor.

(d) Full test data shall be submitted to the Commission at the conclusion of the development work.

(e) Tests may be required on some components during school construction to insure that the performance specifications are achieved by production components in place. Costs of these tests will be borne by School Districts. If tests show that specifications are not met, Component Contractor shall pay for such testing and extra work as is necessary until satisfactory results are obtained.

(f) Testing requirements outlined shall apply to tests on individual components and to components acting together.

The latter testing shall be conducted in the mock-up building prior to conclusion of the development phase.

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July, 1963
Bid Copy

PART 5. COMPONENTS CONTRACT

THIS AGREEMENT, made and entered into this _____ day of ______________, 196__, by and between ______________________________ (the "Component Contractor"), and ______________________________ School District of ____________________ County, California (the "District"), acting through its Board of __________________________ (the "Board"),

WITNESSETH:

WHEREAS, the District is a member of the First California Commission on School Construction Systems (the "Commission"); and

WHEREAS, the Commission received proposals for the benefit of its members covering the work herein provided to be done and designated the Component Contractor as the lowest responsible bidder for such work; and

WHEREAS, the Board desires to have the Component Contractor do said work in accordance with its proposal;

NOW, THEREFORE, in consideration of the premises and the covenants, conditions and other considerations hereinafter set forth, the District and the Component Contractor agree as follows:

1. This agreement is made up of and includes the Commission's Notice to Contractors, dated July 18, 1963, the contract documents furnished by the Commission to the bidder, which consist of Part 1 - Information to Bidders, Part 2 - Construction Program, Part 3 - Proposal, Part 4 - Information and Conditions Applicable to Development Phase of Program, Part 5 - Components Contract, Part 6 - General Conditions, and Part 7 - Performance Specifications, the Component Contractor's Proposal and Bidding Sheets, this Components Contract and the General Conditions attached hereto, the Performance Specifications identified as follows:

____

____

____

____

all of which, taken together, constitute a single agreement. The agreement is the entire contract between the parties, there are no other provisions, representations or warranties, and the agreement may be amended only as provided in the General Conditions.

2. If any extra work is performed by the Component Contractor, he will not be paid for the same, unless it is done pursuant to a written contract for such work, legally entered into between the Component Contractor and the District.

3. Component Contractor agrees to and shall perform all of the work to be done under the contract in the manner required thereby. Component Contractor shall at all times give sufficient supervision to the work, using its best skill and attention, and shall be represented on the work at all times during performance of the contract by a duly designated agent who shall be satisfactory to the Architect. All work shall be done in a good, workmanlike and substantial manner and in strict accordance with the Specifications and Drawings, and shall be done diligently and expeditiously, time being of the essence of this contract.

4. The materials to be furnished under this contract are component parts of an integrated school building system, which is being employed in the construction of the ______________________________

______________________________ School(s). Other components of the system are to be supplied by other Component Contractors and the work not covered by Component Contracts will be done by the District's General Contractor for the School. The Component Contractor, recognizing that successful use of the system requires the active cooperation of all contractors, agrees to work under the supervision of the General Contractor and to be bound by the completion dates for his work which will be established by the District's Architect in consultation with the several Component Contractors and the General Contractor. Such completion dates are hereby adopted as the completion dates for all purposes of the contract, including the computation of liquidated damages under Article 58 of the General Conditions. The Board will be represented by its Architect, who shall have general supervision of the performance of the work in strict accordance with the plans and specifications of the contract or contracts of which these specifications form a part. In order that the Board may act upon expert advice, and upon good procedure, all communications from the Component Contractor to the Board will be through the General Contractor and the Architect, and all communications and instructions from the Board to the Component Contractor will be through the Architect and the General Contractor. The Board reserves the right to alter this procedure without the consent of the Component Contractor.

5. The District shall pay the Component Contractor at the times, in the amounts and in the manner provided in the General Conditions, as payment in full for full and complete performance and completion by the Component Contractor of the work and the contract, the sum or sums specified or to be determined as provided below, hereinafter called the contract price, to wit: Supply and install at ______________ School,

(Specify work and price)

The contract price is subject to being increased or decreased and to withholdings and deductions as provided in the General Conditions. The quantities set forth above are estimates only and no claim against the District shall be made for excess or deficiency therein, actual or relative. If any omissions are ordered by the District or if any changes ordered by the District shall reduce the amount provided for in the contract, payment at the rates or in the amounts specified above shall be made only for the work actually done by Component Contractor and not for the estimated amounts called for by the contract. All sales, use and other taxes are included in said contract price.

6. The obligations of Component Contractor hereunder are subject to the condition that not later than June 30, 1965, member Districts of the Commission shall have accepted Component Contractor's proposal for work of the character specified herein in the construction of schools having an aggregate computed floor area of at least 1,400,000 square feet.

7. Neither party to this contract shall assign the contract or any right to performance thereunder (including the payment of moneys) without the written consent of the other, first had and obtained, which consent shall not be unreasonably withheld. The Component Contractor has been advised and understands that an assignment of this contract by the District to its General Contractor for the school would be a great convenience to the District and hereby gives its written consent to any such assignment as may be approved by counsel for the District. Subject to the provisions of this paragraph with respect to assignment, this agreement shall be binding upon and inure to the benefit of the parties hereto, their respective successors and assigns and, if the Component Contractor be an individual, his heirs, executors and administrators.

8. The work shall not be deemed completed unless and until the Architect has made his final inspection and has certified to the District that the contract has been fully performed. District agrees that the Architect will promptly commence inspection upon actual receipt of written notice from Component Contractor that the work has been completed and is ready for inspection. The Architect's certificate of completion shall not be unreasonably withheld.

IN WITNESS WHEREOF, District and Component Contractor have executed this Agreement in duplicate as of the day and year first above written.

____

By____________________________
"Component Contractor"

________________SCHOOL DISTRICT

By____________________________

Approved:

____

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

750 Welch Road Palo Alto, California

NOTICE TO CONTRACTORS
(Advertisement)

1. NOTICE IS HEREBY GIVEN that the First California Commission on School Construction Systems will receive bids for the supply and installation of school building components for certain school construction projects. The schools will be designed individually by the respective School District architects, who will employ in their design the components herein advertised. The construction of each school will be undertaken and supervised by a general contractor selected by the District in the usual manner. Successful bidders are required to name subcontractors when a contract is entered into with an individual School District.

The school construction projects are located in the following School Districts:

Sacramento City Unified School District
1619 N Street, Sacramento 10, California

San Juan Unified School District
3738 Walnut Avenue, Carmichael, California

East Side Union High School District
4600 Alum Rock Avenue, San Jose, California

Santa Cruz City High School District
133 Mission Street, Santa Cruz, California

Santa Cruz School District
133 Mission Street, Santa Cruz, California

Simi Valley Unified School District
1725 Deodora Street, Simi, California

Excelsior Union High School District
17923 S. Pioneer Boulevard, Artesia, California

La Puente Union High School District
350 N. Hacienda Boulevard, La Puente, California

Glendora Unified School District
440 W. Foothill Boulevard, Glendora, California

Fullerton Joint Union High School District
1000 N. Lemon Avenue, Fullerton, California

Huntington Beach Union High School District
1902 - 17th Street, Huntington Beach, California

Placentia Unified School District
16312 Golden Avenue, Placentia, California

San Dieguito Union High School District
540 N. Highway 101, Encinitas, California

The Commission is an agency of said School Districts constituted pursuant to Section 6500 etseq. of the California Government Code and acting through the Superintendents of five of the member School Districts.

Four categories of components are to be supplied and installed as integral parts of a building system: structure; heating, ventilating and cooling; lighting-ceiling; and interior partitions.

Bids will be received for the supply and installation of a component or components in schools to have an aggregate computed floor area of not less than 1,400,000 square feet and not more than 2,400,000 square feet. These schools are to be completed between September 1966 and December 1967 with delivery of components to begin about June 1965. Provision has been made for escalation of bid prices.

Successful bidders are required to do development work to coordinate design details with related building components and shall share in the costs of a small mock-up building to be used for testing purposes. Development work is to be completed by September 30, 1964.

2. Each bid must conform and be responsive to this invitation, the performance specifications for the component category being bid upon, and all other contract documents. Copies of the contract documents are now on file at the office of the Commission, 750 Welch Road, Palo Alto, County of Santa Clara, California, where the same may be examined and copies obtained upon payment of a fee of $20.00.

Each bid shall be made on the form included in said contract documents and must be accompanied by a bid bond in the form procured from the office of the Commission, duly executed by the bidder as principal and by a corporation authorized to do business in the State of California as surety naming the Commission as obligee, or by a cashier's check or certified check, certified without qualification, drawn on a solvent bank of the State of California or on a national bank doing business in the State of California in the amount of 5% of the lump sum bid.

The above mentioned check or bond shall be given as a guarantee that, if awarded the work, the bidder will enter into separate contracts with the School Districts and will be declared forfeited if the successful bidder refuses to enter into such contract with any of the School Districts after being requested to do so by the Board of Education of the School District, provided that the aggregate requirements of such districts shall be at least equal to the minimum quantity bid upon.

3. Bids shall be sealed and delivered to the office of the Commission on or before 4:00 p.m., October 31, 1963, and will be opened in public at or about 4:00 p.m. of that day in the office of the Commission, 750 Welch Road, Palo Alto, California.

4. The Commission reserves the right to reject any or all bids and any or all items or alternates or propositions of such bids. If no acceptable bid is received, the performance specifications may be altered and re-bid, or the portion of the work for which no acceptable bid was received may then be accomplished by conventional procedures.

   No bidder may withdraw his bid for a period of thirty (30) days after the time set for the submission of bids and the Commission will act upon all bids within that period of time.

5. Interested bidders are required to submit a letter of intent to bid which shall include a statement of the manufacturer's qualifications to do the proposed job, including previous experience in developing components of the general type and category required, and list the names and qualifications of available personnel who will be involved directly in the development work. The letter of intent must be filed with the Commission no later than August 1, 1963. Submission of a letter of intent will not create any obligation to bid, but bids will not be accepted from contractors who have not submitted such letter of intent. The names of all those who submit letters of intent will be promptly furnished to all who have done so. This procedure is being followed to encourage the development of related component proposals.

6. A pre-bid conference will be held by the Commission for manufacturers who intend to submit bids. At the Conference, persons representing the Commission will present in detail the background of the work and will discuss the performance specifications for each component category. The conference is also intended to facilitate discussion between manufacturers of related building components. The conference will be in session for two days, Saturday, July 27 and Sunday, July 28, to begin at 9:00 a.m. July 27 at Cubberley Hall, School of Education, Stanford University, Palo Alto, California. Manufacturers who wish to attend the conference should register before July 27 at the office of the Commission. Registration can be completed by telephone, DA 2-1550.

7. Each successful bidder will be required to furnish a surety bond prior to the commencement of development work (November, 1963). Said bond shall be in the amount of not less than $50,000 and shall guarantee the performance of the development phase of the project.

   Before commencing work on the school or schools of an individual School District (approximately June, 1965), each successful bidder will be required to file two bonds with the Board of Education. One bond shall be in the amount of not less than one hundred per cent (100%) of the contract price of the component being supplied for the schools of that District and shall guarantee the faithful performance of the contract and for the term of one (1) year from the date of acceptance of the work against faulty or improper materials or workmanship that may be discovered during that time. One bond shall be in the amount of not less than one hundred per cent (100%) of the contract price of the component being supplied for the schools of that District and shall be in accordance with the laws of the State of California to secure the payment of all claims for labor and materials used or consumed in the performance of this contract and of all amounts due under the Unemployment Insurance Act.

8. The general prevailing rate of per diem wages and rates for legal holidays and overtime work in the localities in which this work is to be performed for each craft or type of workman or mechanic needed to execute the contracts has been ascertained by the respective Boards of Education of the School Districts. For the convenience of bidders, this information will be available at the office of the Commission after August 15, 1963.

First California Commission on School Construction Systems

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Huntington Beach Union High School District

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SCHOOL CONSTRUCTION SYSTEMS DEVELOPMENT

750 Welch Road, Palo Alto, California DA 2-1550

A project under the
School Planning Laboratory
School of Education
Stanford University
Palo Alto, California

Acting as
Western Regional Center
Educational Facilities
Laboratories, Inc.

And the
Department of Architecture
University of California
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SCHOOL CONSTRUCTION SYSTEMS DEVELOPMENT

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SCHOOL CONSTRUCTION SYSTEMS DEVELOPMENT

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July, 1963
Bid Copy

PART 6. GENERAL CONDITIONS

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

PART 6. GENERAL CONDITIONS

The work specified herein is to be executed according to the following General Conditions which will be rigidly enforced by the Architect and the General Contractor.

1. DEFINITIONS AND QUALIFICATIONS

The term "District" or pronouns in place of the same, where used herein, shall mean the ______________________________ School District of ______________________ County, California.

The term "Board" or pronouns in place of the same, where used herein, shall mean the ______________________________ School District of ______________________ County, State of California, acting by and through the Board of Trustees of the ________________ ______________________________ School District of ________________ County.

The term "Architect", where used herein, shall mean the architect employed by the Board of the ______________________________ School District of ________________ County, State of California.

The term "Component Contractor", where used herein, shall mean the Contractor to whom the contract for the work (supply and installation of a component category) described and specified herein has been awarded by the Board.

The term "Component Contract", where used herein, shall mean this contract between the District and the Component Contractor for the supply and installation of components as specified in the Performance Specifications.

The term "Commission", where used herein, shall mean the First California Commission on School Construction Systems as constituted pursuant to that certain Agreement dated June 18, 1963 among the District and certain other school districts.

The term "General Contractor", where used herein, shall mean the contractor to whom the Board has awarded the contract for the construction of the school or schools specified in this Component Contract.

The term "Plans and Specifications", where used herein, shall mean and include all specifications and provisions of every kind, drawn up by the Architect for the school, whether general, detailed or otherwise, relating to the equipment, material or work and the installation thereof, and the plans and drawings accompanying same which are made a part hereof.

The term "Performance Specifications", where used herein, shall mean the specifications for building components comprising part of the Commission's Invitation to Bid.

The term "inspector", where used herein, shall mean the Building Inspector employed by the Board and approved by the Architect and the State Division of Architecture.

The term "Work", where used herein, shall mean labor or materials or both.

The term "Subcontractor", where used herein, shall include subcontractors of the Component Contractor and the General Contractor.

The term "Computed Area", where used herein, shall mean the building square footage as computed in accordance with the formulas given in Title 2 of the California Administrative Code, Chapter 19 of Division 3, Education Code, Section 1811, subsection (c)(2)(C)3, including the latest ammendments and revisions.

The term "Enclosed Area", where used herein, shall mean the square footage of totally enclosed space measured from exterior rough wall lines.

The term "Roof and Floor Area", where used herein, shall mean the actual square footage of the entire roof system, plus any second storey floor systems, measured from facia lines or exterior rough wall lines. Excluded are detached covered walks.

2. CONTRACT

The form of contract which the successful bidders will be required to sign is on file in the office of the Commission and is hereby referred to, incorporated herein and made a part of these General Conditions.

3. EXAMINATION OF PREMISES

The Component Contractor shall be held to have satisfied himself as to the conditions of the site at which the work is to be performed. He shall ascertain and check the location of any existing conditions which may affect his work. No allowance shall subsequently be made in his behalf for any extra expense to which he may be put due to failure or neglect to make such examination.

4. DRAWINGS AND SPECIFICATIONS ON THE WORK

The General Contractor will keep one copy of all drawings and specifications on building site in good order, available to the Architect, the District, the Component Contractor, and their representatives.

5. UTILITIES

The General Contractor will provide and pay for all water, gas, light, power, and other facilities necessary for the execution and completion of the work.

6. BONDS REQUIRED

Before commencing any work under the contract, the Component Contractor shall file two bonds with the Board. These bonds shall be in the amount and for the purposes specified below. They shall be surety bonds issued by corporations duly and legally licensed to transact business in the State of California and approved by the Commission. They shall be issued at the expense of the Component Contractor and shall be maintained by him and at his expense during the entire life of the contract.

One bond shall be in the amount of not less than one hundred per cent (100%) of the contract price, and shall guarantee the faithful performance of the contract and for the term of one (1) year from the date of acceptance of the work against faulty or improper materials or workmanship that may be discovered during that time.

One bond shall be in the amount of not less than one hundred per cent (100%) of the contract price, and shall be in accordance with the laws of the State of California to secure the payment of all claims for labor and materials used or consumed in the performance of this contract and of all amounts due under the Unemployment Insurance Act.

7. INSURANCE - GENERAL REQUIREMENTS

The Component Contractor shall not commence work under this Contract until all insurance as required by the paragraphs to follow has been obtained and approval given by the District, nor shall the Component Contractor allow any Subcontractor to commence work on his subcontract until similar insurance required of the Subcontractor has also been obtained and approved. Certificates of Insurance including ten day cancellation notice provisions shall be furnished the District by the Component Contractor in every instance.

8. WORKMEN'S COMPENSATION INSURANCE

The Component Contractor shall take out and maintain during the life of this Contract Workmen's Compensation Insurance covering all employees employed at the site of the work and, in case any work is sublet, the Component Contractor shall require each Subcontractor to provide similar coverage.

In case of any class of employees engaged in hazardous work as defined under the Workmen's Compensation Law, the Component Contractor shall provide, and shall cause such Subcontractor to provide, suitable insurance for the protection of his employee not otherwise protected.

9. LIABILITY AND PROPERTY DAMAGE INSURANCE

The Component Contractor shall take out and maintain during the life of this Contract a Comprehensive General Liability Policy affording coverage for the Component Contractor for claims for damages for personal injury, including accidental death, as well as for claims for property damages which may arise from operations under this Contract, whether such operations be by himself or by any Subcontractor or anyone directly or indirectly employed by either of them. This policy shall include broad form and occurrence property damage coverage. The amounts of insurance paid shall be as follows:

A. Bodily Injury Liability limits shall be not less than $300,000 per person and $500,000 per accident.

B. Property Damage limits shall not be less than $100,000.

The following Special Hazards shall be covered by rider or riders to the policies required above, or by separate policies of insurance.

Said riders, policy or policies shall be in the same amounts as set forth above, and shall cover the operation of automobiles, trucks, tractors, and elevators, hoists, and boilers, if same are used on the work. If any or all of such items or equipment are not to be operated on the work, the Component Contractor shall so advise the Architect by letter at the time of submitting proof of insurance coverage.

10. FIRE INSURANCE

The District will effect and maintain or require its general contractor to effect and maintain fire insurance upon the entire structure on which the work of this Contract is to be done to one hundred per cent (100%) of the insurance value thereof, including items of labor and materials connected therewith whether in or adjacent to the structure insured, materials in place or to be used as part of the permanent construction, including surplus materials, shanties, protective fences, bridges, or temporary structures, miscellaneous materials, and supplies incidental to the work and such scaffoldings, staging, towers, forms and equipment as are neither owned nor rented by the Component Contractor, the cost of which is included in the cost of the work.

The Component Contractor and all Subcontractors shall be named or designated in such capacity as insured jointly with the District in all policies, all of which shall be open to the Component Contractor's inspection. If the District fails to show them on request, or fails to effect or maintain insurance as above, the Component Contractor may insure his own interest, at the District's expense.

If required in writing by any party in interest, the District as Trustee shall, upon the occurrence of loss, give bond for the proper performance of its duties. It shall deposit any money received from insurance in an account separate from all its other funds and shall distribute it in accordance with such agreement as the parties in interest may reach. If after loss, no special agreement is made, replacement of injured work shall be ordered and executed as provided for changes in the work; refer to Article 21.

The Trustee shall have the power to adjust and settle any loss with the insurers unless one of the Contractors interested shall object in writing within three working days of the occurrence of loss.

11. DISTRICT'S RIGHT TO TERMINATE CONTRACT

Upon the certificate of the Architect that sufficient cause exists to justify such action, the District may serve written notice upon the Component Contractor and his surety of its intention to terminate this Contract. Causes justifying such notice may be any of the following: If the Component Contractor shall be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency; if he should fail to make prompt payment to Subcontractors; or for material or labor; if he or any of his Subcontractors should violate any of the provisions of this Contract; if he should fail or persistently and repeatedly refuse to supply enough properly skilled workmen or proper materials (except in cases for which extension of time is provided); or if he should persistently disregard laws, ordinances or the instructions of the Architect. Notice of intention to terminate the Contract shall contain the reasons for such action, and unless said sauses cease, with satisfactory arrangements for correction thereof within five (5) days after the serving of such notice then the Contract shall cease and terminate at the expiration of the said five day period.

In the event of such termination, the District shall immediately serve written notice thereof upon the surety and the Component Contractor. The surety shall have the right to take over and perform the Contract provided, however, that within ten (10) days after the District has served notice of intention to terminate the Contract, the surety has given written notice of its intention to take over and perform the Contract or if the surety does not commence performance thereof within the said ten day period following receipt of the District's notice of intention of termination the District may take over the work and prosecute the same to completion by contract or by any other method it may deem advisable, for the account and expense of the Component Contractor, and the Component Contractor and his surety shall be liable to the District for any excess cost occasioned the District thereby. In such event, the District may, without liability for so doing, take possession of and utilize in completing the work such materials, appliances, plant, and other property belonging to the Component Contractor as may be on the site of the work and necessary therefor. In such case, the Component Contractor shall not be entitled to receive any further payment until the work is completed.

If the unpaid balance of the contract price shall exceed the expense of completing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Component Contractor. If such expense shall exceed such unpaid balance, the Component Contractor shall pay the difference to the District. The expense incurred by the District as herein provided and damage incurred through the Component Contractor's default shall be certified by the Architect.

12. CONTRACTOR'S RIGHT TO TERMINATE CONTRACT

If the work should be stopped under an order of any court, or other public authority, for a period of sixty days or more, through no act or fault of the Contractor or of anyone employed by him, or if the Architect should fail to approve any certificate for payment within thrity days after it is due, or if the District should fail to pay the Component Contractor within forty-five days of its presentation any sum certified by the Architect or awarded by arbitrators, then the Component Contractor may upon ten days' written notice to the District and the Architect, stop work or terminate this Contract and recover from the District payment for all work executed, any loss sustained upon any plant or materials, and reasonable profit and damages.

13. THE DISTRICT'S RIGHT TO DO WORK

If the Component Contractor shall neglect to prosecute the work properly, or fail to perform any provision of this Contract, the District, after five days' written notice to the Component Contractor may, without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Component Contractor, provided, however, that the Architect shall approve both such action and the amount charged to the Component Contractor.

14. SEPARATE CONTRACTS

The Board reserves the right to let other contracts in connection with this work. The General Contractor will afford all Component Contractors reasonable opportunity for storage of their materials, will provide that the execution of his work properly connects and coordinates with theirs, and will cooperate with them to the end of facilitating the work.

15. CONFERENCES

At any time during the progress of the work, the Board or Architect shall have authority to require a representative of the Component Contractor empowered to act with regard to the work to attend a conference of any or all of the Contractors engaged on the work, and any notice of such conference shall be duly observed and complied with by the Component Contractor.

16. APPLICATIONS FOR PAYMENTS

The Component Contractor shall submit to the General Contractor an application for each payment and, if required, receipts or other vouchers, showing his payments for materials and labor, including payments to Subcontractors as required herein.

If payments are made on evaluation of work done, such application shall be submitted at least ten (10) days before each payment falls due and, if required, the Component Contractor shall before the first application, submit to the General Contractor a schedule of values of the various parts of the work, including quantities aggregating the total sum of the Contract divided so as to facilitate payments to Subcontractors, made out in such form as the General Contractor and the Component Contractor may agree upon and, if required, supported by such evidence as to its correctness as the General Contractor may designate. Such schedule shall be used as a basis for certificates of payment unless it is found to be in error. In applying for payment, the Component Contractor shall submit a statement based upon this schedule and if required, itemized in such form and supported by such evidence as the Architect may direct, showing his right to the payment claimed. If payments are made on account of materials delivered and suitably stored at the site but not incorporated in the work, the Component Contractor may be required to furnish bills of sale or such other procedure as will establish the District's title to such material or otherwise adequately protect the District's interest.

17. CERTIFICATES FOR PAYMENTS

If the Component Contractor has made application for payment as above, the General Contractor will, within five (5) days, issue a certificate for payment to the Architect for such amount as he decides to be properly due less a sum equal to ten per cent (10%) thereof, to be retained and included as part of the final payment under Contract. No certificate issued nor payment made to the Component Contractor, nor partial or entire use or occupancy of the work by the District shall be an acceptance of any work or materials not in accordance with this Contract. The making and acceptance of the final payment shall constitute a waiver of all claims by the District, other than those arising from unsettled liens, from faulty work appearing after final payment, or from requirements of drawings or specifications, and of all claims by the Component Contractor, except those previously made and still unsettled.

18. PROGRESS PAYMENTS

The price to be paid said Component Contractor as hereinafter provided shall be paid in legally executed and regularly issued warrents of the Said District, drawn on the appropriate fund or funds as required by law and the order of the said District upon certificates issued by its agent, the Architect.

Once each month, on or about a date to be determined by the District, seventy-five per cent (75%) of the value of the material purchased for the work and stored at the site in a manner approved by the Architect, and ninety per cent (90%) of the value of the labor and material incorporated in the work, as approved by the Architect, less the aggregate of previous payments, shall be paid the Component Contractor provided that:

A. The Component Contractor assumes full responsibility for the security and risk of loss from any cause of materials stored as stated above, and agrees to replace at his own expense, at the time they are needed for incorporation in the work; any of the said materials that may have become lost, damaged, destroyed, or have otherwise been rendered unsuitable, from any cause, for use in the work.

B. The Component Contractor shall have furnished satisfactory evidence that all claims for labor and materials against payments received from the District have been paid. If money has been withheld from a Subcontractor, approval to withhold payment shall be obtained from the Architect, before submitting a new application for payment.

C. That no claim shall have been presented to the District by any person based upon any acts or omissions of the Component Contractor and no liens or withhold notices shall have been filed against the said work or the property whereon it was done.

The payment of the progress payments by the District shall not be construed as an absolute acceptance of the work done up to the time of such payments.

19. ACCEPTANCE AND FINAL PAYMENT

Upon receipt of written notice that the work is ready for final inspection and acceptance, the Architect shall promptly make such inspection, and when he finds the work acceptable under the Contract and the Contract fully performed he shall promptly notify the District in writing, stating that the work provided for in this Contract has been completed under the terms and conditions thereof. Thirty-five (35) calendar days after the filing of Notice of Completion of the entire work and its acceptance by the District, the Component Contractor shall be entitled to a certificate for the balance of the contract price remaining unpaid, provided the Component Contractor shall have furnished satisfactory evidence that all claims for labor and materials have been paid, that no claim shall have been presented to the District based upon acts or omissions of the Component Contractor, and no liens or withhold notices shall have been filed against the said work or the property whereon it was done and that final inspection and acceptance has been given by the Division of Architecture.

20. PAYMENTS WITHHELD

The Architect may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate to such extent as may be necessary to protect the District from loss on account of:

A. Defective work not remedied.

B. Claims filed or reasonable evidence indicating probable filing of claims.

C. Failure of the Component Contractor to make payments properly to Subcontractors or for material or labor.

D. A reasonable doubt that the Contract can be completed for the balance then unpaid.

E. Damage to another Contractor.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

21. CHANGES IN THE WORK

A. The District, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the work, the Contract Sum being adjusted accordingly. All such work shall be covered by a Change Order signed by the District and Component Contractor, and shall conform to all requirements of State, County and/or Municipal authority having jurisdiction over such work and shall be executed under the conditions of the original Contract except that any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

B. In giving instructions, the Architect will have authority to require minor changes in the work, not involving extra cost, and not inconsistent with the purposes of the building, but otherwise, except in an emergency endangering life or property, no extra work change shall be made unless in pursuance of a written order from the District signed or countersigned by the Architect, or a written order from the Architect stating that the District has authorized the extra work or change, and no claim for an addition to the contract sum shall be valid unless so ordered.

C. The value of any such extra work or change shall be determined in one or more of the following ways:

1. By estimate and acceptance of a lump sum.
2. By unit prices named in the Contract or subsequently agreed upon.
3. By cost and percentage or by cost and a fixed fee.

D. If none of the above methods are agreed upon, the Component Contractor, provided he receives an order as above, shall proceed with the work. In such case, and also under case 3., he shall keep and present in such form as the Architect may direct, a correct account of the cost, together with vouchers.

E. In any case, and on all change estimates, the Architect shall certify to the amount, including allowances for overhead and profit in the amount of 22% overhead and profit for Subcontract work and 15% for such work as performed by the Component Contractor's forces.

F. Should conditions encountered below the surface of the ground be at variance with the conditions indicated by the drawings and specifications, the Contract sum shall be equitably adjusted upon claim by either party, made within ten days after the first observance of the conditions, and subject to the provisions for changes as outlined above.

22. CLAIMS FOR EXTRA COST

If the Component Contractor claims that any instructions by drawings or otherwise involve extra cost under this Contract, he shall give the Architect written notice thereof within one week after the receipt of such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property, and the procedure shall then be as provided for changes in the work. No such claim shall be valid unless so made.

23. FAULTY LABOR AND MATERIALS

Neither the final certificate nor any provision in the Contract Documents shall relieve the Component Contractor of responsibility for faulty materials or workmanship, and unless otherwise specified, he shall remedy any defects due thereto and pay for any damages to other work resulting therefrom which shall appear within a period of one year from the date of completion. The District will give notice of observed defects with reasonable promptness. If the Architect and District deem it expedient to correct work injured or done not in accordance with the Contract, an equitable deduction from the contract price shall be made therefor. All issues arising under this article shall be decided by the Architect.

24. ERRORS OR CONFLICTS

When the drawings for each school become available, the Component Contractor shall receive them. He shall notify the Architect, and if any errors or conflicts are discovered in the plans or specifications, they shall be interpreted so as to accomplish the real purpose of the plans or specifications, and the Component Contractor agrees to do and furnish all things made necessary by such interpretation.

25. GUARANTEES

A. Guarantee Period: Guarantee all work for one year from the date the project is accepted by the Owner. This does not waive other specified guarantees which may be in excess of one year.

B. Conditions of the Guaranty: Whenever, within the guarantee period, the Contractor is notified by the Architect or the Owner that any item of equipment, material and/or workmanship has proved defective or is not meeting the specification requirements, the Contractor shall immediately replace, repair or otherwise correct the defect or defects without cost to the Owner and the guarantee shall be extended another year from the date the repairs or replacements are completed for the defective item or items.

26. DECISIONS

The General Contractor shall, in the first instance, determine whether the amount and quality of the several kinds of work which are to be paid for under this contract are in accordance with these plans and specifications. All questions in regard to the interpretation of the scope or meaning of the specifications, and the adjustment of discrepancies within or between specifications shall be referred to the Architect of the Board and his decision thereon shall be final.

The District, through its Architect, shall have power to cause all or any part of the work to be pushed with greater diligence when delayed or stopped.

27. ARCHITECT'S DECISIONS

The Architect shall, within ten days, make decisions on all claims of the District or Component Contractor and on all other matters relating to the execution and progress of the work or the interpretation of the Contract Documents.

The Architect's decisions, in matters relating to artistic effect shall be final, if within the terms of the Contract Documents.

28. INSPECTION OF WORK

The Architect shall have the general direction and oversight of the building operations.

The Component Contractor shall provide sufficient, safe and proper facilities at all times for the full inspection of the work by the District's representatives, both at the building and at the various shops where it may be going on.

29. OWNERSHIP OF DRAWINGS AND SPECIFICATIONS

All system specifications and detail, assembly and coordination drawings are the property of The Board of Trustees of The Leland Stanford Junior University. Ideas and techniques shown in the system drawings which are developed by a Component Contractor remain the property of the Component Contractor and may not be reproduced outside the project without his express permission.

All drawings, specifications and copies thereof furnished by the Architect are the property of the District and must be returned to the Architect upon request. They are not to be used on other work without the mutual consent of the District and Architect.

30. COPIES OF DRAWINGS

Unless otherwise provided in the Contract Documents, the Component Contractor will be furnished, free of charge, two copies of drawings and specifications for the execution of the work. The Contractor may obtain additional copies from the Architect at cost.

31. DETAIL DRAWINGS AND INSTRUCTIONS

A. The Component Contractor will be furnished additional instructions and detail drawings as may be necessary to carry out the work included in the Contract. The additional drawings and instructions, thus supplied to the Component Contractor, will be consistent with the Contract Documents, true developments thereof, and will be so prepared that they can be reasonably interpreted as a part thereof. The Component Contractor shall carry out the work in accordance with the additional detail drawings and instructions.

B. The General Contractor and the Architect will prepare, jointly, (1) a schedule fixing the dates at which special detail drawings will be required; and (2) a schedule fixing the respective dates for the submission of shop or setting drawings, installation of materials, supplies, and equipment, and the completion of the various parts of the work, each such schedule to be subject to change from time to time in accordance with the progress of the work.

32. SHOP DRAWINGS, EQUIPMENT LISTS, AND SCHEDULES

The use of the Building System will reduce or eliminate the need for shop drawings. If a small number of shop drawings are still required, the following regulations shall be complied with:

A. The Component Contractor shall submit, for the approval of the Architect, shop and setting drawings and schedule required by the specifications or that may be requested by the Architect and no work shall be fabricated by the Component Contractor save at his own risk, until such approval has been given.

B. Six copies of all drawings, equipment lists, and schedules shall be submitted (unless otherwise specified), accompanied by letter of transmittal which shall give a list of numbers and dates of the drawings submitted. Drawings shall be complete in every respect and bound in sets.

C. The Component Contractor shall submit all drawings, equipment lists, and schedules sufficiently in advance of construction requirements to allow ample time for checking, correcting, resubmitting, and rechecking.

D. The drawings, equipment lists, or schedule submitted shall be marked with the name of the project, numbered consecutively and bear the following stamp of Approval of the Component Contractor as evidence that the drawings have been checked by the Component Contractor:

> "I certify that I have checked this submittal
> and that it complies with all requirements of
> the original drawings and specifications."

By__________________________ Date_____________
Name of the Component
Contractor

Any drawings submitted without this stamp of approval will not be considered or reviewed and will be returned to the Component Contractor for resubmission. If the shop drawings show variations from the requirements of the Contract because of standard shop practice or other reasons, the Component Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment; otherwise the Component Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract Documents.

E. If a drawing, equipment list, or schedule as submitted indicates a departure from the contract requirements which the Architect finds to be in the interest of the District and to be so minor as not to involve a change in the Contract price or time for performance, he may approve the drawing.

F. The approval of shop and setting drawings, equipment lists, and schedules will be general and, except as otherwise provided in Paragraph E above, shall not be construed (1) as permitting any departure from the Contract requirements; (2) as relieving the Contractor of the responsibility for any error in details, dimensions or otherwise that may exist; (3) as approving departures from additional details or instructions previously furnished by the Architect.

33. LAYING OUT WORK

The Component Contractor shall be held responsible for the location and elevation of all the construction indicated by the drawings and specifications.

Prior to commencing work, the Component Contractor shall carefully compare and check all drawings, each with the other, that in any way affect the location or elevation of the work to be executed by him, and should any discrepancy be found, he shall immediately report to the Architect for verification and adjustment. Any duplication of work made necessary by failure or neglect on Component Contractor's part to comply with this injunction shall be done at his sole expense.

34. STAKES AND BENCHMARKS

All stakes, boundary lines, benchmarks or survey marks, etc., which have been or may be established in the building, or in any part of the site, shall be carefully preserved and respected by the Component Contractor.

35. EXECUTION, CORRELATION AND INTENT OF DOCUMENTS

Three copies of Contract Documents shall be signed by the District and the Component Contractor. In case the District and the Component Contractor fail to sign the Contract Documents, the Architect shall identify them.

The Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intention of the documents is to include all labor and materials, work, fabrications, equipment, plant tools, services, and transportation necessary for the proper execution of the work. It is not intended, however, that materials or work not covered by or properly inferable from any heading, branch, class or trade of the specifications shall be supplied unless distinctly so noted on the drawings. Materials or work described in words, which so applied have a well-known technical or trade meaning, shall be held to refer to such recognized standards.

36. COORDINATION WITH AND INSPECTION OF THE WORK OF OTHER CONTRACTORS

It shall be the duty of the Component Contractor, before beginning any of his work, to examine all construction and work of other contractors that may affect his work, and to satisfy himself that everything is in proper condition to receive his work, and he shall notify the General Contractor in writing of any exception that he may take to the construction of the other contractors. Failure on his part so to do shall constitute acceptance of the construction as suitable in all ways to receive his work, except as to the defects that may develop in the other contractors' work after the execution of his own work.

In order that this work shall not be delayed, the General Contractor will notify Component Contractors in ample time to furnish and set in place such portions of their work as is wholly or in part embedded, built-in, attached to, or supported by, the work being executed by him and/or other Component Contractors. Any cutting or patching made necessary by failure or delay on his part to comply with this injunction shall be done at his own expense.

37. COOPERATION

The General Contractor and all Component Contractors shall coordinate their work with all adjacent work and shall cooperate with all other trades so as to facilitate general progress of work. Each trade shall afford all other trades every reasonable opportunity for installation of their work and for storage of their material.

38. DEVIATION FROM PLANS AND SPECIFICATIONS

No deviation shall be made from the Architect's plans or the specifications. If the Component Contractor shall vary from the plans or the specifications in the form or quality of the work, or the amount or value of the materials herein provided for, the Board shall have the right to order such improper work or materials removed, remade or replaced. In the event that the work is ordered changed, any other work disturbed or damaged by such alterations shall be made good at the Component Contractor's expense.

39. QUALITY OF MATERIALS

All materials used on this contract shall be new and the best market quality, unless specified or shown otherwise and shall meet the performance specifications. All material shall be subject to the approval of the Architect as to its quality and fitness, and shall be immediately removed if it does not meet with his approval. The General Contractor may refuse to issue any certificate of payment to the Architect until all defective materials or work have been removed and other material of proper quality substituted therefor.

If the Component Contractor does not remove such condemned work and materials within a reasonable time, fixed by written notice, the District may remove them and may store the material at the expense of the Component Contractor. If the Component Contractor does not pay the expenses of such removal within ten days time thereafter, the District may, upon ten days' written notice, sell such materials at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Component Contractor.

40. TESTING OF MATERIALS

All materials to be incorporated in the work of the Contract will be subject to testing and inspection for compliance with the requirements of the specifications. Required samples of materials or articles shall be submitted for tests or examination and consideration before incorporation of same in the building.

Materials or work required to be tested shall be tested under supervision of, as directed by, and at such points as may be convenient to, the Architect. Tests and inspections shall be of number and nature as required by the Building Code, Title 21, Sections 31, 32, California Administrative Code, and as considered necessary by the Architect. Tests and inspections shall be made in accordance with the applicable standard methods of the A.S.T.M. or other procedures designated herein. The District shall have said tests and/or inspections made and shall pay for all costs incurred by the testing laboratory in connection therewith, except as specifically indicated otherwise or where testing and/or retesting of faulty or defective materials is involved. The costs of all unsatisfactory tests and tests disclosing defective material shall be borne by the Component Contractor.

The Testing Laboratory shall be selected by the Architect, subject to the approval of the School District and the Division of Architecture. The Architect will furnish the Testing Laboratory with a list of tests and inspections required prior to commencement of construction.

Unless otherwise specified the Testing Laboratory shall send copies of all test reports simultaneously to the District, the Architect, the Structural Engineer, the Superintendent, the Contractor, and two (2) copies to the State Division of Architecture, Department of Public Works.

The reports shall state that the tests were made under the responsible charge of a Testing Engineer, holding a license to practice Civil Engineering in the State of California; that the material was tested in accordance with the provisions of these specifications, the rules and regulations of the State Division of Architecture; and that the material tested met or failed to meet the requirements of these specifications.

Upon completion of the work, or when requested, the testing laboratory shall send to the Division of Architecture a notarized report attesting that all tests were reported to said Division and that all tests were made in full compliance with these specifications and the rules and regulations of the Division of Architecture. A copy of this notarized report shall be sent to the Architect.

Acceptance or rejection will be expressed in writing. Materials furnished shall be equal to approved samples in every respect. Samples which are of value after testing will remain the property of the Component Contractor but will be impounded until completion of work.

41.SAMPLES

A. The Component Contractor shall submit for approval of the Architect, without causing delay in the work, any samples required by the specifications, or that may be requested by the Architect, of any and all materials or equipment he proposes to use, and shall prepay all shipping charges.

B. No materials or equipment of which samples are required to be submitted for approval shall be used on the work until such approval has been given by the Architect.

C. Each sample shall have label indicating material represented, its place of origin and names of the producer, the Contractor, and the building of work for which the material is intended. Samples of finished material shall be so marked as to indicate where the materials represented are required by the drawings or specifications.

D. Approval of any sample shall be only for the characteristics or for the uses named in such approval, and no other. No approval of a sample shall be taken in itself to change or modify any contract requirement. When a sample has been approved, no additional sample for that material will be considered and no change in brand or make will be permitted. Approved samples of hardware in good condition may be suitably marked for identification and used in the work.

42.PATENT RIGHTS, COPYRIGHTS, TRADE NAMES AND ROYALTIES

The Component Contractor shall indemnify and save harmless the District and all persons acting under it from all liability on account of any patent rights, copyrights or trade names which may affect the articles or materials or their application under the specifications. The Component Contractor shall pay all royalties or other charges that may arise, due to methods, types of construction, processes, materials or use of equipment, and shall hold the District harmless from any changes whatsoever which may arise, and shall furnish written assurance satisfactory to the Board that such charges have been paid.

43.COMPLIANCE WITH ALL BUILDING LAWS

The Component Contractor shall conform to and abide by all State building, labor and sanitary laws, rules and regulations, and particularly the provisions of Sections 15451 to 15464, inclusive, of the Education Code and regulations based thereon of the Division of Architecture of the Department of Public Works of the State of California, and shall make all reports to said Division of Architecture required by Section 15461 of said Education Code and by said Division of Architecture. Any person who violates any of the provisions of Sections 15451 to 15464, inclusive, of the Education Code or makes any false statement in any verified report or affidavit required thereunder is guilty of a felony. Such laws and regulations shall be considered a part of these specifications, as is set forth herein in full, and all work hereunder shall be executed in accordance therewith.

All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshal, the safety orders of the Division of Industrial Safety, the National Electric Code, the Uniform Plumbing Code, published by the Western Plumbing Officials Association, and other applicable laws of the place of building. Nothing in these plans or specifications is to be construed to permit work not conforming to these codes.

44.PERMITS, LAWS AND REGULATIONS

The District will pay all fees for the checking of the drawings and specifications by the Division of Architecture, and the Bureau of School Planning of the Department of Education of the State of

California. The Component Contractor shall obtain all other permits and all licenses that are required for the performance of his work by all laws, ordinances, rules, regulation, or orders of any office and/or body lawfully empowered to make or issue the same and having jurisdiction, and pay all fees relating thereto and all costs and expenses incurred on account thereof. Each Component Contractor shall include all sales tax and payroll taxes required by law.

Federal Excise Tax, if any, on equipment herein specified is not to be included in the contract, inasmuch as such equipment is tax-exempt when furnished to the District. The District, upon request, will execute and furnish such tax exemption certificates as may be required to the Component Contractor.

45. PREVENTION OF ACCIDENTS

The Component Contractor shall furnish and place proper guards for the prevention of accidents. He shall provide and maintain any other necessary construction required to secure safety of life or property.

46. CARE OF PRESENT BUILDINGS AND SITE

The Component Contractor shall be held responsible for the care and preservation of the present building, if any, of premises and of adjacent premises and coterminous property. Any parts of them injured, damaged or disturbed because of his work shall be repaired, replaced or cleaned by him at his expense.

47. STORAGE OF MATERIALS

During the progress of the work, materials shall be neatly stacked at such points as the General Contractor may direct and shall be properly cared for and protected from the weather. At any time when there are several contractors operating simultaneously, arrangements shall be made for the joint use of storage space so that the progress of the work will be expedited and other contractors not unnecessarily delayed or inconvenienced.

48. USE OF PREMISES

The Component Contractor shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, permits or directions of the Architect and shall not unreasonably encumber the premises with his materials.

The Component Contractor shall not load or permit any part of the structure to be loaded with a weight that will endanger its safety.

The General Contractor will enforce the Architect's instructions regarding signs, advertisements, fires, and smoking.

The General Contractor will provide adequate access to the site for all trucks and cranes.

49. MAINTENANCE OF EXISTING STRUCTURES AND CONDUITS

The removal and/or replacing of any existing structures, pipes, conduits, pavement or other material necessary for the proper completion of any work herein specified will be performed by the General Contractor. The right is reserved to the District and to gas, water, telephone, telegraph and electrical power transmission companies to enter upon the work for the purpose of making repairs and changes that have become necessary by reason of the work specified herein.

50. REMOVAL OF RUBBISH, CLEANING, ETC.

From time to time, and as directed by the General Contractor, the Component Contractor shall clean the building, windows, premises, streets and adjacent property of accumulated rubbish, debris, unnecessary appliances or any other unused rubbish or materials which may constitute an obstruction to the progress or completion of the work, wherever materials or obstruction were caused by his work. At the completion of the work, and as one of the requisites thereof, the Component Contractor shall remove from the building, premises, sidewalks, streets and adjacent premises any and all tools, appliances, rubbish, packing or debris of any kind contributed by his work; he shall go over all of his work and put the same in perfect order and condition; and shall repair or replace all damaged, broken or stained parts of his work, whether so injured by his workmen or by anybody else.

51. SUBCONTRACTORS

The Component Contractor shall be solely responsible for any and all of the work done by his subcontractors or other employees, and all orders or instructions from the Board or Architect or General Contractor shall be through him to them.

It shall be the Component Contractor's duty to see that all of his subcontractors commence their work properly at the proper time, and carry it on with due diligence so that they do not delay or injure either work or materials, and that all damage caused by them or their workmen is properly made good by them or by himself and at his cost.

52. TOOLS, APPLIANCES, SCAFFOLDING, ETC.

Each Component Contractor shall furnish at his own cost and expense all tools and appliances, materials, scaffolding and other equipment necessary for the entire completion of the work, and shall be responsible for their care and guarding of the same.

The Component Contractor shall erect and maintain, where necessary to the progress and completion of the work, all exterior and interior scaffolding, which scaffolding shall be erected in accordance with the safety rules of the State of California. The Component Contractor shall allow the use of said scaffolding to the other contractors on the job. He shall remove the same only after consultation with the General Contractor.

53. ADVERTISING

No advertising signs of any kind shall be displayed on the building, premises, fences, offices or elsewhere on the job, except for a job sign to be designed or approved by the Architect.

54. PROTECTION OF WORK

While the Component Contractor is on the job he shall amply protect all work set by him in the building from any possible damage, and shall furnish all necessary building paper, rough boarding or other materials necessary to accomplish this.

55. CUTTING AND FITTING

Although it is assumed that there will be little or no cutting or fitting of standard components on the job, when this is necessary the following shall apply: the Component Contractor shall do all cutting, fitting and patching of his work that may be required to make its several parts come together properly and prepare it to join or be joined by the work of other contractors, and he shall make good after them. He shall not endanger any work by cutting, digging or otherwise, and shall not cut or alter the work of any other contractor without the written consent of the Architect.

No beam, timber or support of any kind shall be cut without the consent of the Architect, and under no circumstances shall any principal brace, timber, truss, support or other structural member be cut or in any way structurally weakened.

56. QUALITY OF LABOR

All labor used on this contract shall be competent and skilled for the work. If at any time any foreman or workman who shall be employed by the Component Contractor or any of his subcontractors shall be declared by the General Contractor to be incompetent or unfaithful in executing the work, the Component Contractor, on receiving written notice, shall forthwith dismiss such person and shall not again employ him on any part of the work.

57. RIGHT TO OCCUPY OR USE

The District reserves the right to occupy or use any part or parts or the entirety of the building and/or grounds when the Architect deems the same may be safe for use or occupancy. The exercising of this right shall in no way constitute an acceptance of such parts, or any part of the work, nor shall it in any way affect the dates and times when payments shall become due from the District to the contractors, nor shall it in any way prejudice the District's rights in the contract or any bonds guaranteeing the same; the contract to be deemed completed only when all the work contracted for shall be duly and properly performed and accepted by the Board.

58. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

It is hereby understood and mutually agreed that the date of beginning, rate of progress, and the time for completion of the work to be done hereunder are essential conditions of this Contract; and that the work embraced in this Contract shall be commenced on the date of Notice to Proceed issued by the Architect.

The Component Contractor agrees that said work shall be prosecuted to full completion thereof within the time specified. It is expressly understood and agreed that the time for the completion of the work as established in accordance with the Components Contract shall be a reasonable time for the completion of this work.

It is agreed by the parties to this Contract: that in case all the work called for under the Contract in all parts and requirements is not finished or completed before the expiration of the time limit as set forth in accordance with this Contract or as specifically extended by the written consent of the District, damage will be sustained by the District and it is agreed by the parties hereto that it is now and will be impracticable and extremely difficult to ascertain and determine the actual damage the District will sustain in the event of and by reason of such delay; and it is therefore agreed that the Component Contractor will pay to the District the sum of $100.00 (One Hundred Dollars) prorated for each $1,000,000 (One Million Dollars) of construction for each and every calendar day's delay in finishing the work beyond the time prescribed in this Contract or any written consent for extension thereof; said amount has been determined by the parties hereto to be reasonable and to as closely proximate the amount of damages which would be sustained as the result of a delay in completing the project as the parties can at this time ascertain; and the Component Contractor agrees to pay said liquidated damages as herein provided, or at the option of the District said District may deduct the amount thereof from any money due or that may become due the Component Contractor under the Contract.

The Component Contractor shall not be charged with liquidated damages because of any delays in the completion of the work due to unforeseeable cause beyond the control and without default or negligence of the Component Contractor including, but not restricted to acts of God or the public enemy, acts of another Contractor in the performance of contract with the District, fire, flood, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather or delays of Subcontractors due to such causes. The Component Contractor shall within ten (10) days from the beginning of any such delay notify the District in writing, care of the Architect, of the causes of the delay, who shall, after ascertaining the facts and the extent of the delay with the aid of the Architect, extend the time for completing the work, when on its judgment the finding of the facts and determination thereon shall be final and conclusive on the parties thereto.

This article does not exclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

59. DELAYS AND EXTENSION OF TIME

A. If the Component Contractor be delayed at any time in the progress of the work by any act of neglect of the District or the Architect, or of any employee of either, or by any separate Contractor employed by the District, or by changes ordered in the work, or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Component Contractor's control, or by delay authorized by the Architect, or by any cause which the District shall decide. Normal seasonal weather (such as normal rainfall) will not be deemed to constitute a cause for delay.

B. No such extension shall be made for delay occurring more than seven days before claim therefor is made in writing to the Architect. In the case of a continuing cause of delay, only one claim is necessary.

C. If no schedule or agreement stating the dates upon which drawings shall be furnished is made, then no claim or delay shall be allowed on account of failure to furnish drawings until two weeks after demand for such drawings and not then unless such claim be reasonable.

D. This article does not exclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

60. LIMITATION OF HOURS OF WORK

The time of service of any laborer, workman or mechanic employed upon any of the works herein specified shall be limted and restricted to eight (8) hours during any one (1) calendar day, and no laborer, workman or mechanic employed upon said work herein specified shall be required or permitted to labor more than eight (8) hours during any one (1) calendar day, except in cases of extraordinary emergency caused by fire, flood or danger to life or property, or except to work upon public, military or naval defenses or works in time of war.

The Component Contractor shall forfeit, as a penalty to the District, Ten Dollars ($10.00) for each laborer, workman or mechanic employed in the execution of this contract by him, or by any subcontractor under him, upon any public work herein specified for each calendar day during which any laborer, workman or mechanic is required or permitted to labor more than eight (8) hours in violation of the provisions of Articles 1 and 3 of Chapter 1 of Part 7 of Division II of the Labor Code of the State of California. Said sums and amounts which shall have been so forfeited pursuant to this paragraph and said provisions of said Labor Code shall be withheld and retained from payments due to the Component Contractor under this contract, pursuant to this contract and the said terms of said Code; but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the Division of Labor Law Enforcement of the State Department of Industrial Relations or by said Board.

Notwithstanding the provisions of Sections 1810 to 1814, inclusive, of the Labor Code and the foregoing provisions of this paragraph, any such laborer, workman or mechanic shall be permitted to work or labor upon such public work for more than eight (8) hours per day upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.

61. PAYMENT OF NOT LESS THAN THE GENERAL PREVAILING RATE OF PER DIEM WAGES

The Component Contractor and all subcontractors under him shall pay all their laborers, workmen and mechanics on all work included in this contract not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the work is performed (to wit, within the limits of the District), and not less than the general prevailing rate of per diem wages for legal holiday and overtime work in said locality, which per diem wages shall not be less than the stipulated rates contained in a schedule thereof which will be ascertained and determined by the Board to be the general prevailing rate of per diem wages at the time the General Contract is signed for each craft or type of workman or mechanic needed to execute this contract. The Component Contractor shall forfeit as a penalty to the District, Ten Dollars ($10.00) for each laborer, workman or mechanic employed for each calendar day or portion thereof such laborer, workman or mechanic is paid less than the said stipulated rates for any work done under this contract by him or by any subcontractor under him in violation of Articles 1 and 2 of Chapter 1 of Part 7 of Division II of the Labor Code of the State of California. Said sums and amounts which shall have been so forfeited pursuant to this paragraph and the said terms of said Labor Code shall be withheld and retained from payments due to the Component Contractor under said contract, pursuant to this contract and the said terms of said Labor Code, but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the Division of Labor Law Enforcement of the State Department of Industrial Relations or by said Board.

62. NO ALIEN LABOR TO BE EMPLOYED BY ANY CONTRACTOR OR SUBCONTRACTOR

No contractors or subcontractors upon the work herein specified shall knowingly employ or cause or allow to be employed thereon any alien except in cases of extraordinary emergency caused by fire, flood or danger to life or property, or except to work on public, military or naval defenses or works in time of war, or except as otherwise provided in Section 1851.5 of the Labor Code. Within thirty (30) days after any alien is permitted to work thereon, due to an extraordinary emergency, the Component Contractor shall file with the Board a verified report, setting forth the nature of the extraordinary emergency, the name of the said alien and each date he was permitted to work. Failure to file the said report within the said thirty (30) day period shall be prima facie evidence that no extraordinary emergency existed.

The Component Contractor shall forfeit, as a penalty to the District, Ten Dollars ($10.00) for each alien knowingly employed in the execution of this contract by him or by any subcontractor under him upon said work herein specified for each calendar day or portion thereof during which such alien is permitted or required to labor, in violation of the provisions of Articles 1 and 4 of Chapter 1 of Part 7 of Division II of the Labor Code of the State of California. Said sums and amounts which shall have been so forfeited pursuant to this paragraph and the said terms of said Labor Code shall be withheld and retained from payments due to the Component Contractor under the contract, pursuant to this contract and the said terms of said Code, but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the Division of Labor Law Enforcement of the State Department of Industrial Relations or by said Board.

The term "alien", as used herein, means any person who is not a born or fully naturalized citizen of the United States.

63. ONLY MATERIALS & SUPPLIES SUBSTANTIALLY PRODUCED IN THE UNITED STATES SHALL BE USED:

In accordance with Sections 4300 to 4305, inclusive, of the Government Code of the State of California, bidders submitting bids on unmanufactured materials shall submit bids only on unmanufactured materials produced in the United States, and bidders submitting bids on manufactured materials shall submit bids only on manufactured materials manufactured in the United States, substantially all from materials produced in the United States, unless the materials are of a class or kind which are not, or which are manufactured from materials which are not, produced in the United States. The term "United

States", as used in these sections, means the United States of America, and includes any territory or insular possession of the United States. Any person, firm or corporation to whom a contract is awarded who fails to comply with the foregoing sections, shall not be awarded any contract to which they apply for a period of three years from the date of such violation.

64. CONVICT-MADE MATERIALS

No materials manufactured or produced in a penal or correctional institution shall be incorporated in the project under this Contract.

65. IDENTIFICATION OF SUBCONTRACTORS

Section 4102 of the California Government Code requires that any person making a bid on the construction of any public work or improvement shall set forth in his bid or offer

> "(a) The name and the location of the place of business of each subcontractor who will perform work or labor or render service to the general contractor in or about the construction of the work or improvement in an amount in excess of one-half (1/2) of one per cent (1%) of the general contractor's total bid.
> (b) The portion of the work which will be done by each such subcontractor under this act."

Since the successful bidders in this case will be required to hold their bids open until June 30, 1965, a period of more than a year after submission of the bids and will be making delivery and installation of their components at an even later date, the Commission and the School Districts recognize that in many instances it will be impracticable to designate sub-contractors at the time of submission of bids. Accordingly, any bidder may include in his proposal advice to the Commission that it is impracticable for him to designate sub-contractors at the time of submitting the bid and that if he is designated one of the successful bidders he will furnish each School District with the information required by Section 4102 of the Government Code upon receiving written advice from the District that it is prepared to accept his offer.

66. ARBITRATION

All other disputes, claims or questions subject to arbitration under this contract shall be submitted to arbitration in accordance with the provisions, then obtaining, of the Standard Form of Arbitration Procedure of the American Institute of Architects, and this Agreement shall be specifically enforceable under the prevailing arbitration law, and judgment upon the award rendered may be entered in the Court of the Forum, State or Federal, having jurisdiction. It is mutually agreed that the decision of the arbitrators shall be a condition precedent to any right of legal action that either party has against the other.

The Component Contractor shall not cause a delay of the work during any arbitration proceedings, except by agreement with the District. Notice of the demand for arbitration of a dispute shall be filed in writing with the Architect and the other party to the contract. If the arbitration is an appeal from the Architect's decision, the demand therefor shall be made within ten days of its receipt. In any other case the demand shall be made within a reasonable time after the dispute has arisen; in no case, however, shall the demand be made later than the time of final payment, except as otherwise expressly stipulated in the contract.

The Arbitrators, if they deem that the case requires it, are authorized to award to the party whose contention is sustained, such sums as they or a majority of them shall deem proper to compensate him for the time and expense incident to the proceedings and, if the arbitration was demanded without reasonable cause, they may also award damages for the delay. The Arbitrators shall fix their own compensation, unless otherwise provided by agreement, and shall assess the costs and charges of the proceedings upon either or both parties.

67. LIENS (WITHHOLD OR STOP NOTICES)

Neither the final payment nor any part of the retained percentage shall become due until the Component Contractor, if required, shall deliver to the District a complete release of all liens and/or withhold or stop notices arising out of this Contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as he has knowledge or information the releases and receipts include all the labor and material for which a lien could be filed; but the Component Contractor may, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the District, to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Component Contractor shall refund to the District all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

68. ARCHITECT'S STATUS

The Architect, or his authorized representative, shall be the District's representative during the construction period and he shall observe the work in process on behalf of the District. He shall have authority to act on behalf of the District only to the extent expressly provided in the Contract Documents or otherwise in writing, which shall be shown to the Component Contractor. He shall have authority to stop the work whenever such stoppage may be necessary in his reasonable opinion to insure the proper execution of the Contract.

The Architect shall be, in the first instance, the interpreter of the conditions of the Contract and the judge of its performance. He shall side neither with the District nor with the Component Contractor, but shall use his powers under the Contract to enforce its faithful performance by both.

In case of the termination of the employment of the Architect, the District shall appoint a capable and reputable Architect against whom the Component Contractor makes no reasonable objection, whose status under the contract shall be that of the former Architect; and dispute in connection with such appointment shall be subject to arbitration.

69. NOTICES

Any written notice required hereunder shall be deemed properly given if deposited in the United States mail, registered and postage prepaid, and addressed as follows:

District: ________________

____

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Component Contractor: ________________

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July, 1963
Bid Copy

PART 7 - PERFORMANCE SPECIFICATIONS

CATEGORY 6 - STRUCTURE

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

PERFORMANCE SPECIFICATIONS

CATEGORY 6 - STRUCTURE

6-1 INTRODUCTION

The structural system shall allow the various District Architects freedom to plan the structure of the individual schools on a 5'-0" x 5'-0" module or multiples of this module. The structural system in all areas of the school except physical education shall be designed to meet the requirements of an integrated structural, mechanical, and lighting-ceiling sandwich (hereafter referred to as the integrated sandwich). Bids will be evaluated on the basis of consistency, compatability, and a composite total price of the integrated structural, mechanical and lighting-ceiling solutions.

In certain buildings, where code allows, an exposed structure may be used. Therefore, manufacturers shall think of the final appearance of their product as contributing to the character of the individual schools. Consistency, compatibility, and simplicity of the structural detailing is of the essence. SCSD will coordinate the detailing of all components with each other. For purposes of the structural bid, it shall be assumed that the structure will be a horizontal, waterproof, insulated plane supported by columns with no load bearing walls. Provision for lateral loads will be by others.

6-2 COORDINATION

A. Coordination during the bidding period:

The structural components shall be coordinated with each other and with other components which comprise the integrated sandwich.

B. Coordination during development period:

During the development stage of the project, this Component Contractor shall coordinate all structural developments with adjacent or pertinent building components to assure workable details, connections, clearances and tolerances. SCSD will be the central coordinator during this development period.

6-3 CONTRACT DOCUMENTS

Parts 1 through 6 of the Contract are a part of this section of the specifications, and the work done within this Contract shall be coordinated with Categories 7 through 9 of the Performance Specifications, Part 7.

6-4 SCOPE

This Component Contractor shall furnish and install all labor, materials, equipment and transportation necessary to complete the work and obtain the performance specified herein. Included shall be research, development, testing, supply of components and equipment, installation, and supervision.

6-5 GOVERNING REGULATIONS

All work shall be performed in accordance with the latest rules and regulations of the Division of Architecture, Title 21 of the California Administrative Code; and with the provisions of the 1961 Uniform Building Code Volume I and III, except as the requirements of the UBC may conflict with a particular requirement of Title 21 in which case Title 21 shall govern. (Wherever Title 21 has been quoted or paraphrased in this section, asterisks (*) will be used.)

Where the designer desires to depart from the methods of analysis set up by Title 21, it shall be necessary that he submit his method in detail, together with complete information including computations and test data covering the design in question.*

Acceptance and approval by the Division of Architecture of materials, assembly of materials or types of construction other than those recognized in Title 21 shall be dependent upon rational structural analyses or upon tests establishing physical characteristics and demonstrating adequacy for the intended use.*

All work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshal, Title 19, California Administrative Code, for the prevention of fire and for the protection of life and property against fire and panic.

All work shall be performed in accordance with the following national standards where applicable and if not in conflict with Title 21.
Steel:

American Iron & Steel Institute
American Institute for Steel Construction
American Welding Society
Steel Joist Institute
Metal Roof Deck Technical Institute

Concrete:

American Concrete Institute
Prestressed Concrete Institute
National Concrete Masonry Institute

Timber:
American Institute of Timber Construction
National Lumber Manufacturers' Association
West Coast Lumberman's Association

6-6 WORK INCLUDED

All elements necessary to complete the structural system described herein, including structural facias, roofing, insulation, expansion joints, location of base plates, anchoring of columns, roof tie downs, bracing for operable partitions, and temporary handling attachments.

6-7 WORK NOT INCLUDED

Foundations, slab on grade, structural frame for operable partitions, stairs, freestanding covered walks, provision for taking lateral shear, location and installation of anchor bolts.

6-8 SPECIAL CONDITIONS

The structure shall meet the requirements for one hour construction or heavy timber. Where two hour fire separation walls occur in individual schools, the vertical structure shall meet the requirements for this two hour construction.

Where new construction techniques require testing, the method and procedure will be determined by the State Fire Marshal. Materials shall be tested in accordance with procedures established by ASTM E 119-61 Temperature Control Test to meet requirements for one hour construction.

The effect of the structure on the foundations will be evaluated in the awarding of bids.

All bids shall include erection, and will be considered on the basis of the in-place cost. If the Component Contractor does not do the erection himself, refer to Part 6, Identification of Subcontractors.

If a structural system is dependent on a specific type or spacing of shear walls or bracing more restrictive than the limitations set forth in Title 21, the structural bidder shall contact SCSD for review without waiting for the evaluation submission.

6-9 STOCKPILING

Structural members may be stockpiled; however, they shall be fabricated under the continuous inspection of an independent agency as required by the Division of Architecture.

6-10 STRUCTURAL CALCULATIONS

In addition to technical data, detail drawings, and assembly drawings, the Component Contractor shall submit complete structural calculations, by a licensed structural engineer in the State of California, including those which shall comply with Title 21, California Administrative Code, Division of Architecture, to be available for use by the structural engineers employed by the District Architects. Calculations shall be available by April 1, 1964.

6-11 CORROSION RESISTANCE

In a specific structural system where materials or connections may be affected by corrosion if exposed to the weather, the structural bidder shall present suggested methods for controlling this corrosion at the evaluation submission unless the design of the system does not permit such exposure.

6-12 EXPANSION AND CONTRACTION

Consideration shall be given to expansion and contraction and all solutions shall be related to the module. The structural bidder shall describe methods for expansion and contraction at the evaluation submission. If expansion joints require additional costs, the structural bidder shall submit a bidding sheet for evaluating these costs at the evaluation submission.

6-13 TOLERANCE SYSTEM

The structure shall conform to dimensional tolerances in accordance with the latest applicable standards for materials used. The General Contractor will locate all anchor bolts to a tolerance of ± 1/8".

Under no circumstances shall the structural members deflect below the horizontal under full live load, and the maximum variation allowed above the horizontal, including camber and deflection, shall be 1/360 of the span for all spans except 70' and 75'. The maximum variation for 70' and 75' spans shall be 2". If larger deflections are required for a specific structural system, the structural system shall be coordinated with a lighting-ceiling system capable of taking the excess deflection. If no lighting-ceiling system is capable of this, the structure shall meet deflection requirements as stated above.

6-14 DIMENSIONAL CRITERIA

A. General Information
In the academic areas, the maximum unobstructed area will be approximately 7200 sq. ft. with an optimum span of 60', and a maximum required bay size of 30' x 75'. This maximum unobstructed area will have a maximum length to width ratio of 2:1.

B. Horizontal Module
The horizontal structural module shall be 5'-0" x 5'-0". Multiples of this module shall be used in designing the structural components. The horizontal planning module for other components will be 4 inches (4" x 4").

C. Vertical Module
The vertical module of construction for both structure and planning shall be 12"; however, not every increment of 12" will be used. The maximum depth allowed for the integrated sandwich (i.e., from the bottom of the ceiling to the top of the roof deck exclusive of insulation and

roofing) shall be 36". The roof structure does not have to be in increments of the 12" module, but shall be located within the 36" depth. The integrated sandwich shall be the same depth throughout. The depth of the gymnasium structure shall not exceed 60".

D. Change of Level
Provision for changes of level of slabs on grade in increments of 2'-0" shall be made. Methods for handling changes of level shall be stated in the evaluation submission. If additional costs will be incurred, the structural bidder shall submit a proposed bidding sheet at the evaluation submission.

E. Required Horizontal Spans (Nominal Dimensions, does not include overhangs)

1. Roof Spanning Members

Span		%	Roof Area for Bidding Purposes Only
One story roof	30'	8	112,000
One story roof	40'	10	140,000
One story roof	45'	10	140,000
One story roof	55'	10	140,000
One story roof	60'	30	420,000
One story roof	70'	10	140,000
One story roof	75'	10	140,000
Gymnasium	90'	4	56,000
Gymnasium	110'	5	70,000

2. Floor Spanning Members

Span		%	Second Floor Area for Bidding Purposes Only
Two story floor	30'	1	14,000
Two story floor	40'	1	14,000
Two story floor	45'	1	14,000

3. Primary beams shall be available in 10', 15', 20', 25', and 30' nominal lengths. Beams larger than 30' may be used if bidder desires. See charts A and B in the bidding sheets for alternative range of beam sizes. Interior structural beams may project above the roof; however, the requirements for a uniform facia shall be adhered to, and design shall be approved by SCSD. All boundary beams which project below the roof supporting structure shall have a uniform finished cross section.

F. Required Vertical Spans (Nominal Dimensions)

Academic Ceiling Heights		10'-0"; 12'-0"
Other Ceiling Heights		14'-0"; 16'-0"; 18'-0"
Floor-to-Floor Height (for 2 story construction)		13'-0"
Roof Heights:	One Story	13'-0"; 15'-0"; 17'-0"; 19'-0"; 21'-0"
	Two Story	26'-0"; 28'-0"
	Gymnasium	25'-0" to bottom of structure

G. Columns

The columns shall be designed to provide for nominal floor to ceiling and floor to floor heights. Columns shall be in increments of 4" outside dimension. The outside dimension of the columns shall provide for two story construction as well as one story.

The maximum column spacing required perpendicular to the horizontal spans shall be 30'-0" and the minimum column spacing allowed shall be 10'-0".

All columns shall be square, rectangular or cruciform. Other shapes will be acceptable on approval by SCSD. The variation in column sizes shall be held to a minimum.

If a structural bidder wishes to offer additional column shapes this shall be stated at the evaluation submission. Unit prices shall be submitted when the other unit prices are due. These columns will be considered an optional part of the system and the cost will not be figured in the Lump Sum Bid.

6-15 LOADING

Refer to Article 2, Title 21, California Administrative Code.

A. Roof Loading

Live Load - 20#/sq. ft. However, Code reductions may be applied in accordance with Title 21, Table 203.

Dead Load - a. Assume 5#/sq. ft. plus structure, roofing, and insulation.

b. Equipment:
1. Allow for mechanical equipment of compatible bidders.
2. Provide lateral support for operable partition components.
3. Gymnasium equipment such as backstops, rings, ropes, and scoreboards may be hung from the structure in the gymnasiums.

B. Floor Loading for Classroom and Corridors

Live Load - 50#/sq. ft. Code reductions may be applied in accordance with Section 205 of Title 21.

Dead Load - Assume 26#/sq. ft. plus structure. Also allow for mechanical equipment of compatible bidders.

C. Stairways

Live Load - 75#/sq. ft. in accordance with Section 201 of Title 21.

Dead Load - Shall include the risers, tread, stringers, structure and under side of stairway.

Note: Stairways are not to be included within the system. However, a method shall be provided which recognizes openings in the structure for stairways and also provides for attachment capabilities.

6-16 ATTACHMENTS

All structural connections for components specified herein shall be included in this contract. All attachment, and responsibility for attachment, of other building components to the structure will be by others. However, during the development stage of the project this Component Contractor shall coordinate with other Component Contractors and SCSD to provide for the detail design and location of all attachments to the structure.

Inserts and holes necessary for attachment of components within the integrated sandwich shall be standard. If unit prices are required for attachments of components which are not part of the integrated sandwich, this component bidder shall provide requirements for a pricing schedule at evaluation period.

If special inserts, clips or holes are necessary for other components, the cost will be negotiated and paid for by the Component Contractor needing these parts. The structural Component Contractor shall give prices for such inserts, clips or holes insofar as they do not conflict with his component system.

A. Structure

Every building and all structural parts thereof shall be of sufficient strength to support the estimated or actual imposed loads, including lateral forces, without exceeding the allowable working unit stresses and without excessive deflection as specified in Title 21,* or these specifications, whichever is the more stringent.

The structural frames of all buildings shall be carried up true and plumb, and temporary bracing shall be introduced wherever necessary to take care of all loads to which the structures may be subjected, including erection equipment and the operation of same.*

Horizontal diaphragms may be used to distribute or to resist horizontal forces in lieu of horizontal beams, trusses, or other determinate systems.* Such diaphragms shall transmit horizontal forces to shear walls or bracing (provided by others) through connections provided for this purpose.

All permanent structural elements capable of providing resistance to horizontal shear shall be assumed to act integrally with structural frames in resisting the shears and moments due to the horizontal forces, unless specifically designed and constructed to act independently of said structural frame.*

Column attachments at the slab on grade shall be capable of adjustment to meet the tolerances of setting anchor bolts or base plates. No exposed attachments will be allowed.

B. Heating, Ventilating, and Cooling

1. General

The integrated sandwich shall provide for air distribution. Methods for minimum standards are outlined as follows:

Method A: The structure forming the duct space. Necessary duct areas will be dependent on detailed mechanical systems developed for the project, and this Component Contractor shall coordinate with the mechanical Component Contractor to insure an efficient composite system of structure and air distribution.

The structure shall also be able to be penetrated (subject to structural limitations) for two purposes. First, penetrations for air distribution and control, as required by a specific mechanical system. Second, penetration required to accommodate access to parts of the mechanical system. Inserts, covers, or closures shall be provided for such penetrations and shall be of incombustible materials and meet any code requirements. If exposed, such inserts, covers, or closures shall be visually compatible with the system

Method B: Structure permitting duct penetration within the structural depth.

Method C: Structure not permitting duct penetration. Such structure shall permit required duct work to pass beneath the structure within the 36" integrated sandwich.

Method D: Integrated sandwich forming a plenum space.

Method E: Any combination of the above.

C. Services

Services which may be attached to the structure within the integrated sandwich will occur in two ways:

First, those which are included as part of the integrated sandwich and thus are the responsibility of the Component Contractor requiring such services within the integrated sandwich. These will include plumbing and electrical work which is part of the heating, ventilation, and cooling system and lighting-ceiling system.

Second, those which are installed within the integrated sandwich but are not the responsibility of any of the Component Contractors whose components are within the integrated sandwich. These will include vents, waste lines, gas and water not relating to the mechanical system, sprinklers, electrical conduit, and roof drains.

All holes and/or penetrations of the integrated sandwich are the responsibility of the Component Contractor requiring such holes and/or penetrations. The structural Component Contractor shall give unit prices for any holes and/or penetrations of the roof, such as flues and vents, which are not the responsibility of any Component Contractors whose components are within the integrated sandwich. Structural systems shall provide for the passage of these services.

D. Exterior Materials

Exterior materials which may be attached to the structure will include metal, concrete, masonry, wood, plastics, glass and ceramics.

E. Roof Construction

Openings for skylights shall be provided in the structural system and methods for their installation will be evaluated at the evaluation submission. Skylights up to 5'-0" square shall be provided for. Similar openings will be required for smoke vents.

This Component Contractor shall provide a method for the attachment of facias every 5'-0" unless they are an integral part of the structural system.

F. Interior Partitions

The attachments at the top of interior partitions shall be either directly to the structure or to a ceiling system, provided by others, which will have sufficient strength to receive the partition panels. See section below. Operable partitions will always attach to the structure.

G. Lighting-Ceiling

The structure shall provide a method for attachment of compatible lighting-ceiling systems at 5'-0" intervals in each direction. An exposed structure may be the finished ceiling in the academic area, provided it presents a finished fire resistant surface, is coordinated with the lighting components, and meets the acoustical and illumination requirements of the lighting-ceiling specifications. The roof structure in the gymnasium may be exposed.

If exposed structural elements form part of the ceiling, it shall be possible for the lighting-ceiling Component Contractors to provide horizontal ceiling elements to receive partitions.

If exposed structural elements form part of the ceiling, or light reflectors, it will be the responsibility of the lighting-ceiling Component Contractor to provide any necessary finish to bring the reflectance values up to those specified in the lighting-ceiling specification. However, it shall be this Component Contractor's responsibility to provide a clean, smooth uniform surface.

H. Floor

Tentative transmission loss criteria for floor construction shall be given at the evaluation submission. This criteria will help the architects and consulting engineers in determining how to treat the floors and ceilings to achieve minimum transmission loss criteria.

This criteria shall be available in two forms. One, criteria for airborne sound transmission loss, and the other, criteria for impact noise transmitted.

Relative to impact noise, tentative acceptable standards will be in accordance with the following impact noise curve as permissible in the classroom below when a standardized impact noise generator is in operation on the floor above:

75 - 150 CPS - 66 DB

150 - 300 CPS - 66 DB

300 - 600 CPS - 66 DB

600 - 1200 CPS - 62 DB

1200 - 2400 CPS - 54 DB

2400 - 4800 CPS - 47 DB

The average level above this curve shall not exceed 2 DB, and the measured curve for the floor must not exceed the maximum curve by more than 8 DB at any octave band.

Relative to airborne sound, the tentative acceptable standard will be a Sound Transmission Class (STC) of 48.

6-17 ROOFING, INSULATION AND FLASHING

Roofing, insulation, flashing and any other materials necessary to give a 20 year bonded type roof, shall be included in the structural bid. The structural Component Contractor shall furnish a written guarantee to keep roofing and flashings in a watertight condition for a period of 2 years from and after the date of acceptance of the building by the District.

At the completion of each job and at the time the District accepts the work, the District may, at their option, require a 20 year roofing bond, which shall bond the manufacturer at his own expense to make any repairs to the roofing required to maintain the roof in a watertight condition for the 20 year period. This bond shall be on a form, and by a reputable bonding company, and shall include a 20 year flashing endorsement. The financial liability for the bond shall be at least $10.00 per square. The cost of the bond shall not be included in this bid, but shall be paid for by each district if they choose to exercise their option.

The roof covering shall be a Class "A" or "B" fire retardant roof covering bearing the label of an approved testing laboratory.

The roof assembly shall have a "U" thermal value of 0.10 from the underside of the roof deck to the top of the roof covering. Still air on the underside of the roof deck shall not be included in "U" value calculations.

The compressive strength of rigid insulation at 10% deformation shall not be less than 35 PSI.

A method shall be provided for roof drainage, and described at the evaluation submission; however, roof drains and fittings will be by others. The area of ponding shall never exceed 7% of the roof area of any given bay when rain has stopped. At no time shall ponding be in excess of 1".

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

Appendix 1
BIDDING INSTRUCTIONS

CATEGORY 6 - STRUCTURE

1. This bid proposal is for purposes of establishing a basis for bidding. The total computed area of school construction within this project will be between 1,400,000 sq. ft. and 2,400,000 sq. ft. of floor area as determined by the Local Allocations Division, Department of Finance, State of California. As the exact area will not be known until after the bidding period, it is necessary to assume a reasonable volume as a basis for bidding and bonding. For these bidding purposes, the total project actual area shall be 1,400,000 sq. ft.

   A. Refer to Part 1, Information to Bidders for general information on project bidding procedures, coordination of component categories before bidding, evaluation submission, etc.

   B. In the Bidding Sheets the 1,400,000 sq. ft. of roof and second floor area is broken down into exact areas to be served by each of the specified spanning members. This breakdown is an approximation of the percentage of use for each spanning member and is an estimate for bidding purposes only. The exact proportion of use of the spanning members will be a matter of choice of the District Architects and their engineers, and will be influenced by the unit price.

   C. The total lump sum bid shall be the total installed price of all items, necessary to meet the requirements of the specifications.

   D. Unit prices, as called for in the Bidding Sheets, are not required at the time of the bid submittal. This allows the successful bidder to reapportion or adjust unit costs within the total lump sum bid as development progresses and details are refined.

   E. The successful bidder shall submit to the Commission by July 1, 1964 unit prices of all items listed in the Bidding Sheets which shall relate exactly to the original lump sum cost used as a basis for the awarding of the bid.

   F. The successful bidder shall submit to the Commission by September 1, 1964 the following:

      1. The exact size and physical characteristics of each component in the form of detailed drawings.

2. Assembly drawings showing various connections, attachments, and conditions relating to other components in the integrated sandwich.

G. Mock-up Building

This Component Contractor is responsible for work on the mock-up building program as outlined in Part 4; Information and Conditions Applicable to Development Phase of Project.

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

BIDDING SHEETS: (A) LUMP SUM

CATEGORY 6 - STRUCTURE

In response to the Commission's Invitation to Bid, dated ______________ 1963, the undersigned hereby proposes and agrees to furnish any and all labor, materials, equipment, transportation, and services for the development, testing, supply, and erection of the building components as called for in the Commission's Performance Specifications, Category 6, Structure, for a total Roof and Floor Area of 1,400,000 square feet. The undersigned acknowledges that this square footage is an area used as a base for bidding and bonding, that the actual Computed Area of the project schools will be between 1,400,000 and 2,400,000 square feet, and that unit prices derived from this bid are applicable within the above stated range.

The undersigned further agrees to furnish to the Commission by July 1, 1964 unit prices for each component. The unit prices required are set forth by the section of this Contract entitled BIDDING SHEETS: (B) UNIT PRICES.

The undersigned further agrees to furnish by September 1, 1964 detailed drawings indicating the number, size, and physical characteristics of each component.

It is understood that the Structure components covered by this Proposal must be compatible with at least one system for heating, ventilating and cooling, and one for lighting-ceiling. The Structural system of this Proposal is compatible with the component systems of the bidders listed here:

Heating, Ventilating and Cooling

____

____

____

____

Lighting-Ceiling

____

____

____

____

The undersigned further agrees that his company name shall be listed on the bidding sheets of all bidders named above. It is understood that the Commission will consider component systems to be compatible only when the names of bidders are mutually listed.

It is further understood (a.) that bids will be awarded only on a composite basis which includes the three component categories: structure; heating, ventilating and cooling; and lighting-ceiling, and that the bid price to be considered by the Commission will be the sum of the three lump figures from three compatible component categories, and (b.) that if a manufacturer submits bids to cover two or three of the component categories, he shall submit a separate price for each category on the bidding sheets for that category.

For all work called for in the Performance Specifications, Category 6, Structure.

____

__________________________ DOLLARS ($________________)

____
(Name and quality of bidder)

By____________________________
(Title of corporate officer or
other individual executing proposal)

Dated ______________, 1963

at ____________________

Bidder's address:

____

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

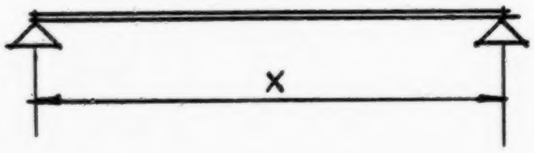
BIDDING SHEETS: (B) UNIT PRICES

CATEGORY 6 - STRUCTURE

I. ROOF SPANNING MEMBERS

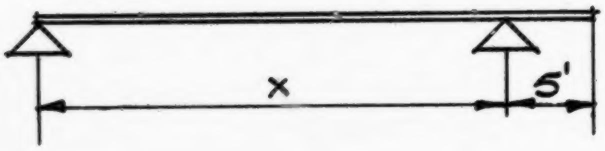
CONDITIONS Tributary area conditions for roof spanning members [Note: The following conditions are symbolic only and do not intend to infer a specific shape or structural approach]

A.



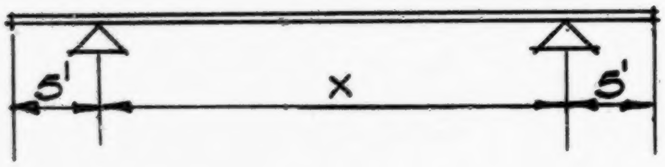
Span in feet

B.



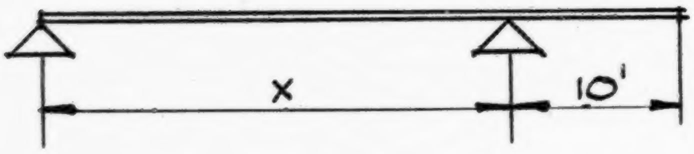
Span in feet plus 5' cantilever on one side

C.



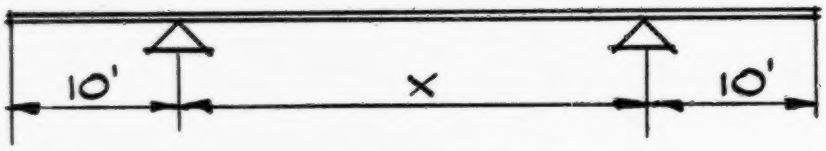
Span in feet plus 5' cantilever on two sides

D.



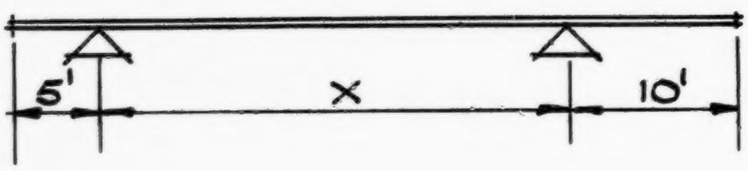
Span in feet plus 10' cantilever on one side

E.



Span in feet plus 10' cantilever on two sides

F.



Span in feet plus 10' cantilever on one side and 5' cantilever on one side

1. Unit prices shall include the cost of all connections to any supporting members and all costs of connections within tributary spanning system.
2. Free standing covered corridors are not included under the system.
3. Unit prices shall include the cost of erection.
4. The smallest building area will be 7200 sq. ft.

1 - 30' SPAN - 8% OF TOTAL AREA OR 112,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	70% 78,400 sq. ft.	$______ sq. ft.	$ ____________
B	6% 6,720 sq. ft.	$______ sq. ft.	$ ____________
C	5% 5,600 sq. ft.	$______ sq. ft.	$ ____________
D	10% 11,200 sq. ft.	$______ sq. ft.	$ ____________
E	5% 5,600 sq. ft.	$______ sq. ft.	$ ____________
F	4% 4,480 sq. ft.	$______ sq. ft.	$ ____________
		TOTAL	$ ____________

2 - 40' SPAN - 10% OF TOTAL AREA OR 140,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	70% 98,000 sq. ft.	$______ sq. ft.	$ ____________
B	6% 8,400 sq. ft.	$______ sq. ft.	$ ____________
C	5% 7,000 sq. ft.	$______ sq. ft.	$ ____________
D	10% 14,000 sq. ft.	$______ sq. ft.	$ ____________
E	5% 7,000 sq. ft.	$______ sq. ft.	$ ____________
F	4% 5,600 sq. ft.	$______ sq. ft.	$ ____________
		TOTAL	$ ____________

3 - 45' SPAN - 10% OF TOTAL AREA OR 140,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	70% 98,000 sq. ft.	$______ sq. ft.	$ ____________
B	6% 8,400 sq. ft.	$______ sq. ft.	$ ____________
C	5% 7,000 sq. ft.	$______ sq. ft.	$ ____________
D	10% 14,000 sq. ft.	$______ sq. ft.	$ ____________
E	5% 7,000 sq. ft.	$______ sq. ft.	$ ____________
F	4% 5,600 sq. ft.	$______ sq. ft.	$ ____________
		TOTAL	$ ____________

4 - 55' SPAN - 10% OF TOTAL AREA OR 140,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	70% 98,000 sq. ft.	$______ sq. ft.	$ __________
B	6% 8,400 sq. ft.	$______ sq. ft.	$ __________
C	3% 4,200 sq. ft.	$______ sq. ft.	$ __________
D	8% 11,200 sq. ft.	$______ sq. ft.	$ __________
E	9% 12,600 sq. ft.	$______ sq. ft.	$ __________
F	4% 5,600 sq. ft.	$______ sq. ft.	$ __________
		TOTAL	$ __________

5 - 60' SPAN - 30% OF TOTAL AREA OR 420,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	70% 294,000 sq. ft.	$______ sq. ft.	$ __________
B	6% 25,200 sq. ft.	$______ sq. ft.	$ __________
C	3% 12,600 sq. ft.	$______ sq. ft.	$ __________
D	8% 33,600 sq. ft.	$______ sq. ft.	$ __________
E	9% 37,800 sq. ft.	$______ sq. ft.	$ __________
F	4% 16,800 sq. ft.	$______ sq. ft.	$ __________
		TOTAL	$ __________

6 - 70' SPAN - 10% OF TOTAL AREA OR 140,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	70% 98,000 sq. ft.	$______ sq. ft.	$ ____________
B	6% 8,400 sq. ft.	$______ sq. ft.	$ ____________
C	3% 4,200 sq. ft.	$______ sq. ft.	$ ____________
D	8% 11,200 sq. ft.	$______ sq. ft.	$ ____________
E	9% 12,600 sq. ft.	$______ sq. ft.	$ ____________
F	4% 5,600 sq. ft.	$______ sq. ft.	$ ____________
		TOTAL	$ ____________

7 - 75' SPAN - 10% OF TOTAL AREA OR 140,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	70% 98,000 sq. ft.	$______ sq. ft.	$ ____________
B	6% 8,400 sq. ft.	$______ sq. ft.	$ ____________
C	3% 4,200 sq. ft.	$______ sq. ft.	$ ____________
D	8% 11,200 sq. ft.	$______ sq. ft.	$ ____________
E	9% 12,600 sq. ft.	$______ sq. ft.	$ ____________
F	4% 5,600 sq. ft.	$______ sq. ft.	$ ____________
		TOTAL	$ ____________

8 - 90' SPAN - 4% OF TOTAL AREA OR 56,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $	/SQ.FT.	COST
A	60% 33,600 sq. ft.	$______	sq. ft.	$ ____________
C	40% 22,400 sq. ft.	$______	sq. ft.	$ ____________
			TOTAL	$ ____________

9 - 110' SPAN - 5% OF TOTAL AREA OR 70,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $	/SQ.FT.	COST
A	60% 42,000 sq. ft.	$______	sq. ft.	$ ____________
C	40% 28,000 sq. ft.	$______	sq. ft.	$ ____________
			TOTAL	$ ____________

TOTAL COST
ALL ROOF SPANNING MEMBERS $ _______________

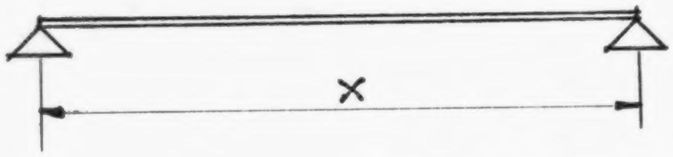
II. FLOOR SPANNING MEMBERS

CONDITIONS

Tributary Area - Condition for floor spanning members

[Note: The following condition is symbolic only and does not intend to infer a specific shape or structural shape]

A.



Span in feet

10 - 30' FLOOR SPAN - 1% OF TOTAL AREA OR 14,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	100% 14,000 sq. ft.	$______ sq. ft.	$ ____________

11 - 40' FLOOR SPAN - 1% OF TOTAL AREA OR 14,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	100% 14,000 sq. ft.	$______ sq. ft.	$ ____________

12 - 45' FLOOR SPAN - 1% OF TOTAL AREA OR 14,000 SQ. FT.

CONDITION	SQUARE FOOTAGE	COST IN PLACE $ /SQ.FT.	COST
A	100% 14,000 sq. ft.	$______ sq. ft.	$ ____________

TOTAL COST
ALL FLOOR SPANNING MEMBERS $ ______________

III. ROOF BOUNDARY BEAMS

1. Approximately 60% of roof boundary beams have tributary area of up to 30 feet per lineal ft. of beam.

2. Approximately 40% of roof boundary beams have tributary area of up to 47.5 feet per lineal ft. of beam.

3. If bidder wishes to design for the larger tributary area only, this will be acceptable; however, the total bid shall be for 26,000 L.F. of roof boundary beam with no cantilever, 3300 L.F. of roof boundary beam with cantilever, and 2005 L.F. of gymnasium boundary beam.

4. If bidder wishes to bid on longer beams he may do so using the tables below as to quantity. He is required to submit a bid on only one of the alternate beam ranges. This bidding sheet is based on beam range "A".

5. If bidder uses beam range other than "A", he need not provide as many columns (see column portion of this bidding sheet.)

6. If bidder wishes to take advantage of continuity of span in the design of beams, he may do so. The majority of spans may be designed for continuity; however, all beam sizes shown from 10' to 30' are required.

7. Unit prices shall include the cost of all connections to columns or supporting members.

ALTERNATIVE BEAM RANGES FOR
ROOF BOUNDARY BEAMS WITH NO CANTILEVER

Beam Length	A	B	C	D
10	3110 L.F.	2590 L.F.	2600 L.F.	2590 L.F.
15	5715 L.F.	4695 L.F.	3900 L.F.	3330 L.F.
20	5720 L.F.	4680 L.F.	3920 L.F.	3340 L.F.
25	5725 L.F.	4675 L.F.	3900 L.F.	3350 L.F.
30	5730 L.F.	4680 L.F.	3900 L.F.	3360 L.F.
40	-	4680 L.F.	3880 L.F.	3320 L.F.
50	-	-	3900 L.F.	3350 L.F.
60	-	-	-	3360 L.F.

CHART "A"

ROOF BOUNDARY BEAMS WITH NO CANTILEVER

Beam	Total Quantity	Tributary Area - 30 Feet	Tributary Area - 47.5 Feet
10'	12% 3110 L.F.	1870 L.F. or 187 units @$_____/unit = $______	1240 L.F. or 124 units @$_____/unit = $______
15'	22% 5715 L.F.	3420 L.F. or 228 units @$_____/unit = $______	2295 L.F. or 153 units @$_____/unit = $______
20'	22% 5720 L.F.	3440 L.F. or 172 units @$_____/unit = $______	2280 L.F. or 114 units @$_____/unit = $______
25'	22% 5725 L.F.	3425 L.F. or 133 units @$_____/unit = $______	2300 L.F. or 92 units @$_____/unit = $______
30'	22% 5730 L.F.	3450 L.F. or 115 units @$_____/unit = $______	2280 L.F. or 76 units @$_____/unit = $______
TOTAL		$________	$_______

ROOF BOUNDARY BEAM WITH 10' CANTILEVER 1 SIDE

Beam	Total Quantity	Tributary Area - 30 Feet	Tributary Area - 47.5 Feet
25'	1000 L.F.	500 L.F. or 20 units @$_____/unit = $_____	500 L.F. or 20 units @$_____/unit = $_____
30'	1200 L.F.	600 L.F. or 20 units @$_____/unit = $_____	600 L.F. or 20 units @$_____/unit = $_____
TOTAL		$_____	$_____

ROOF BOUNDARY BEAM WITH 5' CANTILEVER 1 SIDE

Beam	Total Quantity	Tributary Area - 30 Feet	Tributary Area - 47.5 Feet
25'	500 L.F.	250 L.F. or 10 units @$_____/unit = $______	250 L.F. or 10 units @$_____/unit = $______
30'	600 L.F.	300 L.F. or 10 units @$_____/unit = $______	300 L.F. or 10 units @$_____/unit = $______
TOTAL		$______	$______

ROOF BOUNDARY BEAM - GYM

Beam	Total Quantity	Tributary Area - 65 Feet	Lump Sum
15'	1005 L.F.	67 units @$________	$ __________
20'	1000 L.F.	50 units @$________	$ __________

Note: If bidder wishes to use a larger bay size for gymnasium, he shall submit his ideas and a revised bid proposal to SCSD for evaluation.

TOTAL COST ALL ROOF BOUNDARY BEAMS $ __________

IV. FLOOR BOUNDARY BEAMS

Beam	Quantity	Tributary Area - 23 Feet	
10'	430 L.F.	43 units @$______/unit	$ ________
15'	450 L.F.	30 units @$______/unit	$ ________
20'	440 L.F.	22 units @$______/unit	$ ________
25'	450 L.F.	18 units @$______/unit	$ ________
30'	390 L.F.	13 units @$______/unit	$ ________

TOTAL COST ALL FLOOR BOUNDARY BEAMS $ __________

Note: If longer spans are desired, this will be evaluated at evaluation submission.

V. ROOF INTERIOR BEAMS

1. Approximately 15% of roof interior beams have tributary area of up to 45 feet per lineal ft. of beams.
2. Approximately 60% of roof interior beams have tributary area of up to 60 feet per lineal ft. of beams.
3. Approximately 25% of roof interior beams have tributary area of up to 75 feet per lineal ft. of beams.
4. If bidder wishes to design for the largest or two largest tributary areas only, he may do so; however, total bid shall be for 14,615 L.F. of roof interior beams with no cantilever and 1000 L.F. of roof interior beams with cantilever.
5. If bidder wishes to bid on longer beams he may do so using the tables below as to quantity. He is required to submit a bid on only one of the alternate beam ranges. This bidding sheet is based on beam range "A".
6. If bidder uses a beam range other than "A" he need not provide as many columns (see column portion of this bidding sheet).
7. If bidder wishes to take advantage of continuity of span in the design of beams, he may do so. The majority of spans may be designed for continuity; however, all beam sizes shown from 10' to 30' are required.

8. No dropped beams will be permitted on the interior.

9. Beams projecting above roof will be permitted if design is approved by SCSD.

10. Unit prices shall include the cost of all connections to columns or supporting members.

ALTERNATE BEAM RANGES FOR ROOF INTERIOR BEAMS WITH NO CANTILEVER

Beam Length	A	B	C	D
10'	1180 L.F.	1110 L.F.	1030 L.F.	975 L.F.
15'	3375 L.F.	2685 L.F.	2265 L.F.	1950 L.F.
20'	3360 L.F.	2700 L.F.	2260 L.F.	1960 L.F.
25'	3350 L.F.	2700 L.F.	2250 L.F.	1950 L.F.
30'	3360 L.F.	2700 L.F.	2280 L.F.	1950 L.F.
40'	-	2720 L.F.	2280 L.F.	1960 L.F.
50'	-	-	2250 L.F.	1950 L.F.
60'	-	-	-	1920 L.F.

CHART "B"

ROOF INTERIOR BEAMS WITH NO CANTILEVER

		15%	60%	25%
Beam	Quantity	Tributary Area - 45 Feet	Tributary Area - 60 Feet	Tributary Area - 75 Feet
10'	8% 1180 L.F.	170 L.F. or 17 units @$_____/unit = $_____	710 L.F. or 71 units @$_____/unit = $_____	300 L.F. or 30 units @$_____/unit = $_____
15'	23% 3375 L.F.	510 L.F. or 34 units @$_____/unit = $_____	2040 L.F. or 136 units @$_____/unit = $_____	825 L.F. or 55 units @$_____/unit = $_____
20'	23% 3360 L.F.	500 L.F. or 25 units @$_____/unit = $_____	2040 L.F. or 102 units @$_____/unit = $_____	820 L.F. or 41 units @$_____/unit = $_____
25'	23% 3350 L.F.	500 L.F. or 20 units @$_____/unit = $_____	2025 L.F. or 81 units @$_____/unit = $_____	825 L.F. or 33 units @$_____/unit = $_____
30'	23% 3360 L.F.	510 L.F. or 17 units @$_____/unit = $_____	2040 L.F. or 68 units @$_____/unit = $_____	810 L.F. or 27 units @$_____/unit = $_____
		$_______	$_______	$_______

ROOF INTERIOR BEAM WITH 10' CANTILEVER 1 SIDE

Beam Beam	Quantity	Tributary Area - 60 Feet	Tributary Area - 75 Feet
25'	500 L.F.	250 L.F. or 10 units @$_____/unit = $_____	250 L.F. or 10 units @$_____/unit = $_____

ROOF INTERIOR BEAM WITH 5' CANTILEVER 1 SIDE

Beam	Quantity	Tributary Area - 60 Feet	Tributary Area - 75 Feet
25'	500 L.F.	250 L.F. or 10 units @$_____/unit = $_____	250 L.F. or 10 units @$_____/unit = $_____

TOTAL COST ALL ROOF INTERIOR BEAMS $ ___________

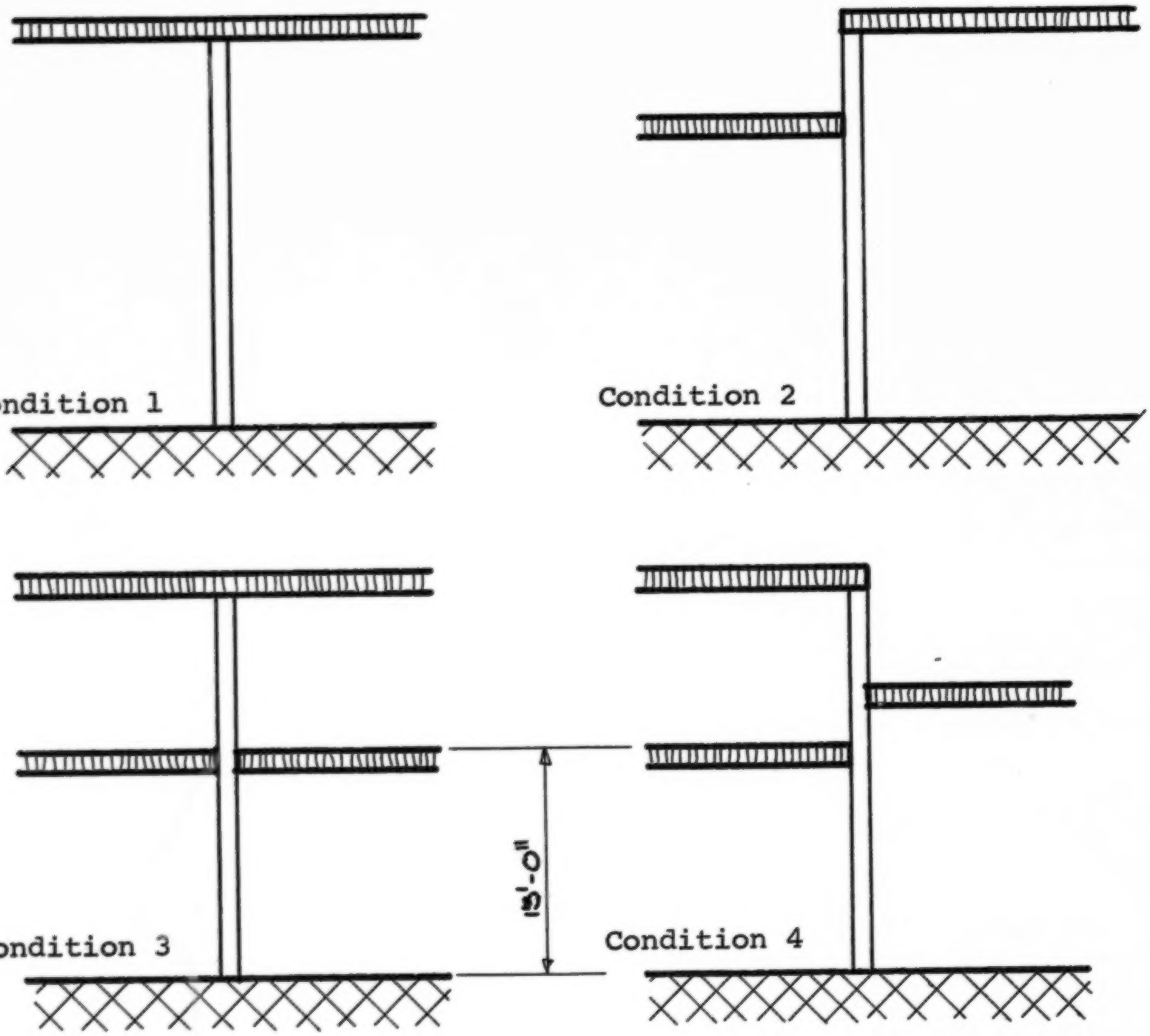
VI. FLOOR INTERIOR BEAMS

Beam	Quantity	Tributary Area - 45 Feet	
10'	300 L.F.	30 units @$_____/unit	$ ________
15'	300 L.F.	20 units @$_____/unit	$ ________
20'	280 L.F.	14 units @$_____/unit	$ ________
25'	300 L.F.	12 units @$_____/unit	$ ________
30'	270 L.F.	9 units @$_____/unit	$ ________

TOTAL COST ALL FLOOR INTERIOR BEAMS $ ___________

Note: If longer spans are desired this will be evaluated at evaluation submission.

VII. COLUMNS



COLUMN CONDITIONS - FIGURE 1

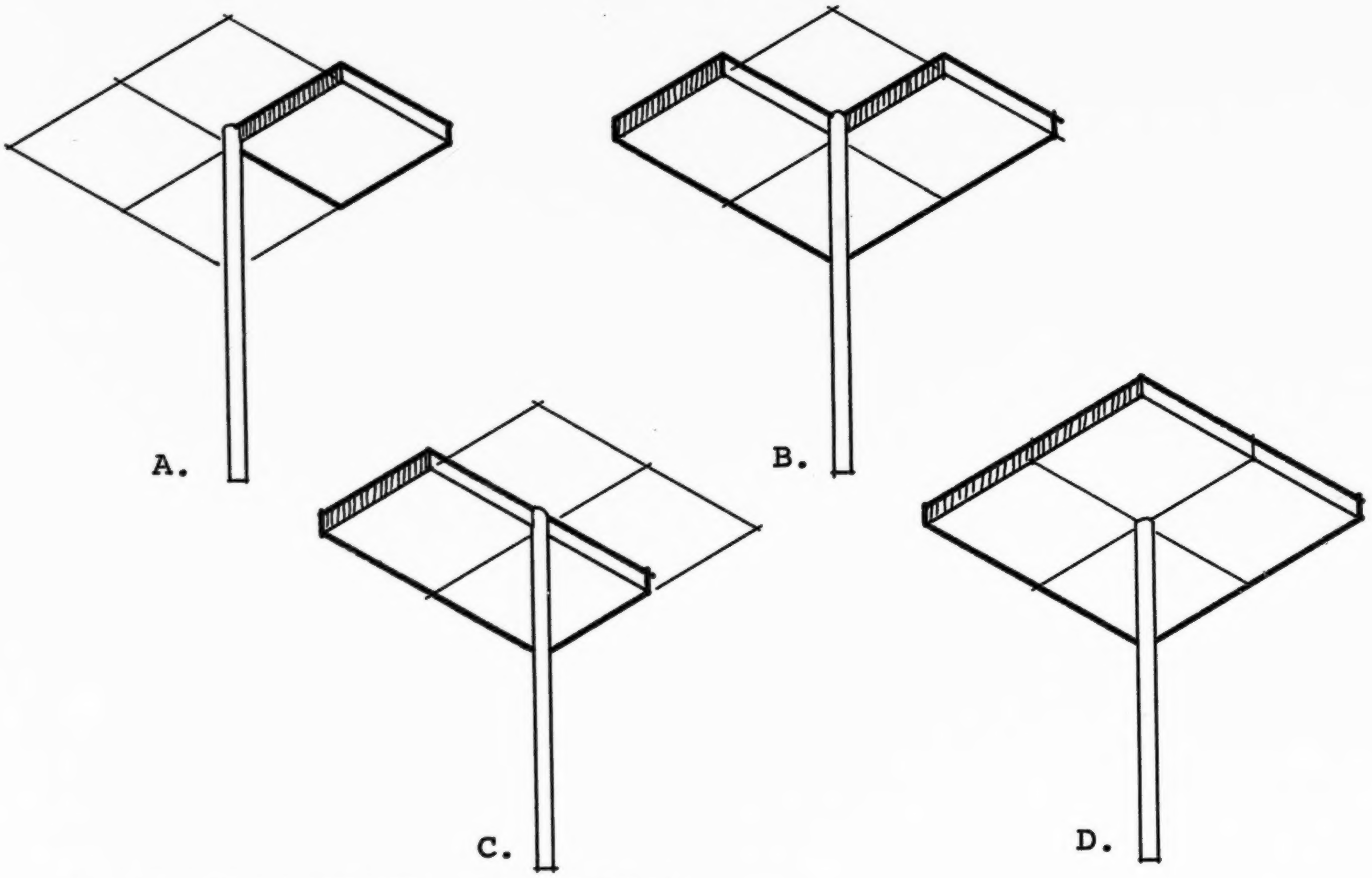
Note: The above conditions are symbolic only and do not intend to infer a specific shape or structural approach.

1. Column unit prices shall include the cost of the connection at the base, including base plates.

2. Conditions 1, 2, 3, and 4 may be used with any combinations of loading conditions A, B, C, or D. (See next page).

3. If bidder uses alternate beam ranges B, C, or D as shown in charts "A" and "B", he may deduct columns from the 10' and 12' column heights of Condition 1 on the next page as follows:

Beam Range B (Total 100)	Deduct 40 columns from 10' height w/T.A. of 2250 sq.ft.
	Deduct 60 columns from 10' height w/T.A. of 1200 sq.ft.
Beam Range C (Total 200)	Deduct 60 columns from 10' height w/T.A. of 2250 sq.ft.
	Deduct 90 columns from 10' height w/T.A. of 1200 sq.ft.
	Deduct 20 columns from 12' height w/T.A. of 2250 sq.ft.
	Deduct 30 columns from 12' height w/T.A. of 1200 sq.ft.
Beam Range D (Total 300)	Deduct 80 columns from 10' height w/T.A. of 2250 sq.ft.
	Deduct 120 columns from 10' height w/T.A. of 1200 sq.ft.
	Deduct 40 columns from 12' height w/T.A. of 2250 sq.ft.
	Deduct 60 columns from 12' height w/T.A. of 1200 sq.ft.



LOADING CONDITIONS - FIGURE 2

Note: The above conditions are symbolic only and do not intend to infer a specific shape or structural approach.

CONDITION 1 - 2130 COLUMNS

Column Height	Tributary Area - 2250 sq. ft.	Tributary Area - 1200 sq. ft.
10'	528 columns @$____/col.=$______	788 columns @$____/col.=$______
*10'	28 columns @$____/col.=$______	42 columns @$____/col.=$______
12'	160 columns @$____/col.=$______	251 columns @$____/col.=$______
*12'	10 columns @$____/col.=$______	15 columns @$____/col.=$______
14'	25 columns @$____/col.=$______	37 columns @$____/col.=$______
16'	20 columns @$____/col.=$______	42 columns @$____/col.=$______
18'	10 columns @$____/col.=$______	22 columns @$____/col.=$______
20'	10 columns @$____/col.=$______	22 columns @$____/col.=$______
22'	4 columns @$____/col.=$______	16 columns @$____/col.=$______
25'	6 columns @$____/col.=$______	96 columns @$____/col.=$______

*These columns shall meet requirements for two hour construction as needed.

CONDITION 2 - 50 COLUMNS

Height	Design for Maximum Condition
12'	4 columns @$_____/col. = $_________
14'	10 columns @$_____/col. = $_________
16'	10 columns @$_____/col. = $_________
18'	9 columns @$_____/col. = $_________
20'	6 columns @$_____/col. = $_________
25'	14 columns @$_____/col. = $_________
	TOTAL $_____________

CONDITION 3 - 80 COLUMNS

Height	Design for Maximum Condition
21'	40 columns @$_____/col. = $_________
23'	40 columns @$_____/col. = $_________
	TOTAL $_____________

CONDITION 4 - 20 COLUMNS

Height	Design for Maximum Condition
21'	10 columns @$_____/col. = $_________
23'	10 columns @$_____/col. = $_________
	TOTAL $_____________

TOTAL COST - ALL COLUMNS $ ______________

VIII. ROOFING, INSULATION AND FLASHING

If bidder does not require a roofing for his structure, he may submit his alternate proposal at the evaluation submission. Bidder will still be responsible to meet the requirements of section 6-17 of the structural specification.

A. ROOFING

1,400,000 sq. ft. @$________/sq.ft. = $__________

B. INSULATION

1,400,000 sq. ft. @$________/sq.ft. = $__________

C. GRAVEL STOP

50,000 L.F. @$________/L.F. = $__________

D. CANT STRIP

50,000 L.F. @$________/L.F. = $__________

E. BASE FLASHING

2000 L.F. @$________/L.F. = $__________

F. HOLES IN ROOF 12" SQUARE OR SMALLER

1475 holes @$________/hole = $__________

TOTAL COST - ALL ROOFING, INSULATION
FLASHING, ETC. $_______________

TOTAL COST OF UNIT PRICES - RELATING TO THE LUMP SUM FIGURE:

I. ROOF SPANNING MEMBERS $ ____________

II. FLOOR SPANNING MEMBERS $ ____________

III. ROOF BOUNDARY BEAMS $ ____________

IV. FLOOR BOUNDARY BEAMS $ ____________

V. ROOF INTERIOR BEAMS $ ____________

VI. FLOOR INTERIOR BEAMS $ ____________

VII. COLUMNS $ ____________

VIII. ROOFING, INSULATION, & FLASHING $ ____________

TOTAL COST $ _______________

[TO BE NOT MORE THAN LUMP SUM BID]

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July, 1963
Bid Copy

PART 7 - PERFORMANCE SPECIFICATIONS

CATEGORY 7 - HEATING, VENTILATING AND COOLING

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

PERFORMANCE SPECIFICATIONS

CATEGORY 7 - HEATING, VENTILATING AND COOLING

7-1 INTRODUCTION

The purpose of these specifications is to provide performance standards and other requirements to enable the general mechanical systems to be selected and bid for the varying types of space involved in the project schools.

These specifications are not intended to imply any specific system as being more or less suitable for the project. It is the function of the bidder to make his own choice as to the way in which the specified requirements can be met.

Systems proposed by bidders will be submitted for evaluation by SCSD and its consultants. See Part 1, Information to Bidders, for calendar and details.

This evaluation will be concerned with the suitability of the proposed system for the project, its compatibility with structure, lighting-ceiling, and interior partitions, and factors of maintenance and operation which can not readily be specified. Bidders shall submit in writing enough detailed information at this time to enable the technical qualities of their system to be accurately assessed by the Commission, technical advisors, including an independent mechanical engineer. Full catalog data, detail drawings, samples, and prototypes may be submitted at this stage if available.

The results of this evaluation will be passed back to the bidder to assist in the final development of his proposal, and to help in the coordination with bidders in other component categories.

It is expected that following the evaluation phase, when the competing systems are known to SCSD, the specifications will be revised and amplified by addenda to relate to the systems proposed, and to insure that the price bids are based on as complete specifications as are possible under the performance system of bidding.

It is realized that certain types of systems may produce satisfactory environmental conditions with criteria which vary from those called out herein. Bidders who wish to modify criteria shall submit a description of any proposed changes not later than their proposal for evaluation, and if in the opinion of SCSD and its consultants the bidder can show convincingly that a change in criteria is justified because of specific features of his system, then the criteria may be modified. It is recognized that it is the aim of a mechanical system to produce good environmental conditions in the spaces, rather than to meet arbitrary criteria and it is not felt that at present environmental criteria can be definitive enough to be regarded as unchangeable.

7-2 COORDINATION

A. Coordination during the bidding period.
The Heating, Ventilating and Cooling system components shall be coordinated with each other and with other components which comprise the integrated sandwich.

B. Coordination during development period:
During the development stage of the project, this Component Contractor shall coordinate all his development work with adjacent or pertinent building components to assure workable details, connections, clearances, and tolerances. SCSD will be the central coordinator during this development period.

7-3 CONTRACT DOCUMENTS

Parts 1 through 6 of the Contract are a part of this section of the Specifications and the work done within this contract shall be coordinated with Categories 6, 8, and 9 of the Performance Specifications Part 7.

7-4 SCOPE

This section covers the supply and installation of the Heating, Ventilating and Cooling systems for the projected buildings; and includes any Plumbing and Electrical control-wiring which forms a part of the above installation. Included is research and development, prototype testing; detail coordinated design with other components; provision of mock-up and testing; supply of components and equipment, installation, supervision, testing in place, and adjustment.

7-5 GOVERNING REGULATIONS

All work shall be done in conformity with the rules, regulations, and requirements of the latest edition of the following codes:

A. State of California Administrative Code

Title 8. Industrial Relations - Industrial Safety Order for:
    Boiler and Fired Pressure Vessels
    Compressed Air
    Electrical
    General Industry
    Unfired Pressure Vessels

Title 17. Public Health

Title 19. Public Safety - Chapter 1. Rules and regulations of the State Fire Marshal

Title 21. Public Works - Division of Architecture

B. Uniform Building Code [1] - Pacific Coast Building Officials Conference. 1961 Edition.

C. Uniform Plumbing Code - Western Plumbing Officials Assoc.

D. National Board of Fire Underwriters Publications:

Pamphlet 70 - National Electrical Code
Pamphlet 90A - Air Conditioning & Ventilating System

E. National Electrical Code - National Electric Manufacturers Assoc.

F. Other Codes applicable to the work.

7-6 PERFORMANCE TESTING

Specific criteria are given for systems to serve each type of space. This Component Contractor shall arrange for and pay for all inspections and tests necessary to assure that these criteria are achieved. Testing shall be done by an independent testing organization approved by SCSD, and copies of the test results shall be made available to SCSD.

Satisfactory interim test results from the Phase One mock-up building program shall be completed by September 1, 1964. Verification by final testing in the Phase Two mock-up building, and testing done in independent laboratories shall be completed by March 1, 1965. All systems in the Phase Two mock-up shall be operative by September 1, 1964.

A. Testing shall be done in rooms without furniture or equipment.

B. Work plane shall be 30" above finished floor.

C. Breathing line shall be 48" above finished floor.

7-7 DETAILS AND UNIT PRICES

A. This Component Contractor shall keep SCSD informed as to the quantity and character of the various components during the development period, and shall furnish, by December 1, 1963, an itemized breakdown of the component parts of the Heating, Ventilating and Cooling systems for approval by SCSD. This breakdown shall include the quantity of each component required within each system.

B. After the development period but before July 1, 1964, this Component Contractor shall furnish to SCSD the following information related to the original lump sum bid for the specified types of spaces.

1. The installed unit price for each component.

---

[1] Where in conflict with California Administrative Codes, latter shall apply.

2. The installed unit price on a linear basis for services required by components.

3. The total installed cost of each sub-system.

The sum of the total installed costs of all sub-systems shall not be greater than the original lump sum bid of this Component Contractor. Refer to Part 1 Information to Bidders, Bidding Procedures.

C. This Component Contractor shall also furnish to SCSD by September 1, 1964 the following information:

1. The exact size and physical characteristics of each component in the form of detailed drawings, including dimensional data on mounting and connection, and weights of major items.

2. Complete performance rating data applicable to the type and function of the equipment.

3. Data on limitations of use, and recommended combinations of components, combined with components of the lighting-ceiling category, to achieve the specified performance.

7-8 MECHANICAL COOLING

All schools will be designed with the probability of mechanical cooling as intrinsic to their basic architectural design. Specific requirements in these specifications as to insulation values of walls and roofs, and the restriction of allowable heat gain on exterior glass walls are designed to assist the economy and efficiency of a mechanical cooling system.

It is estimated that a minimum of 700,000 sq. ft. of the enclosed area of the schools will have mechanical cooling. Percentage of the remainder of the space to be cooled will be dependent on cost. Bidding sheets ask for prices for systems both with, and without, mechanical cooling. Bidders shall provide a cost figure for both systems.

A. Spaces in the schools where mechanical cooling will be most likely are:

General Academic (7-17*)
Administration & Guidance (7-18)
Science (7-19)
Music (7-20)
Multi-Use (7-24)

B. Spaces where mechanical cooling will be less likely are:

Physical Education (activity) (7-21)
Food Service (7-25)
Miscellaneous spaces (7-26)

*Numbered categories above refer to the space descriptions in Sections 7-17 to 7-26

C. Spaces where mechanical cooling will be extremely unlikely are:

Industrial Arts (heavy shop areas) (7-20*)
[Note that these areas may contain classroom type space of the character of General Academic (7-17) where mechanical cooling will be desirable]
Physical Education (lockers & changing rooms) (7-22)

D. The performance criteria outlined later (7-29) apply both to mechanically cooled and to ventilated space, except as noted.

7-9 CONTROL

A. The control system shall maintain the thermal environment in all spaces, at design conditions, to meet the performance criteria established in these specifications.

B. Factors involved in the control of a system will be used as one of the bases for evaluation of competing systems. A statement on the recommended control procedure shall be submitted as part of the proposal for evaluation.

C. The control system shall be either pneumatic-electronic or electric-electronic.

D. The control system shall be capable of simple rearrangement, if necessary, to meet the demands of flexibility in academic spaces. However, the provisions for rearrangements should not require an extensive initial system. Part of the responsibility of the integrated design to be submitted by the bidder shall be to provide a system which will permit a great variety of possible rearrangements to be made without disturbing the finished surfaces and equipment. At the same time, the design shall provide a system which does not require an extensive outlay of equipment, conduits, wiring and tubing which is not needed for the initial installation, but which must be installed to provide for the future rearrangements.

7-10 INSTALLATION

All bids shall include the installation of a complete system, and the successful Component Contractor will be nominated on the basis of the in-place cost. Installation shall be bid on the basis outlined in Information to Bidders, Bidding Procedures, and performed in accordance with the terms of the General Conditions of the Contract Part 6.

It shall be the Component Contractor's responsibility to coordinate his installation with that of other Component Contractors in accordance with the time schedules set forth by the General Contractor under the terms of General Conditions Part 6.

*Numbered categories above refer to the space descriptions in Sections 7-17 to 7-26.

7-11 WARRANTY

All equipment supplied and installed by this Component Contractor shall be accompanied by a warranty, for both parts and labor. Equipment shall be warranted for a period of five years from date of installation to be free from defects in materials and workmanship and to perform as represented in manufacturer's performance data.

This warranty shall not apply if the equipment has been subjected to misuse, negligence, accident in transit, or has been tampered with or altered in any way.

In all cases where this Component Contractor is contacted and, upon inspection, finds that performance failure is due to defective materials or workmanship, all necessary parts together with labor for installing them will be provided by this Component Contractor at no cost to the District.

7-12 MAINTENANCE

This Component Contractor shall submit with his bid the terms of a long-term maintenance contract which may be entered into at the option of each individual School District. It is intended that this contract will embrace periodic inspection, replacement of parts on failure and as necessary on a preventative maintenance basis. School District personnel will be responsible for minor inspection and servicing: the Component Contractor will be responsible for their training and supervision of their work.

This Component Contractor shall call out the terms of this maintenance contract as part of his material submitted for evaluation.

7-13 EQUIPMENT LOCATION

Equipment may be located on the roof. Component Contractor shall coordinate with Structural Component Contractor to insure compatibility with structural system.

In general, roof mounted equipment shall occur not less than fifteen feet (15') from the perimeter of a building. However, layouts in which ductwork or other equipment approach the perimeter or form a coordinated feature of the perimeter architectural character may be acceptable, subject to approval by SCSD.

Equipment which serves 3 or more Mechanical Service Modules* may utilize mechanical room space located so as not to impede requirements of planning flexibility. The Component Contractor shall give an indication of the mechanical room area necessary relative to the area served by the system, and the desired location of this space. Structural requirements call for the ability to achieve a 7200 sq. ft. clear space with no interior columns or shear walls: mechanical spaces should also be on the perimeter of this space.

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*See Appendix 1, item B for definition of Mechanical Service Module.

Consideration may be given to the use of supporting hollow structural members (columns) large enough to contain mechanical equipment. Such members will not exceed 60" square in exterior plan dimension. Careful coordination will be necessary to insure that both mechanical and structural requirements are met, and that such a member relates to the interior partition system.

7-14 EXPOSED MECHANICAL EQUIPMENT

Mechanical equipment, or components, which are exposed on building interiors and exteriors shall be well organized and detailed. The Component Contractor shall be expected to co-operate with SCSD at the development phase to insure that this is accomplished. It is preferred to achieve this by good design of equipment, well detailed insulation, and painting, rather than by architectural concealment. Component Contractors are encouraged to think of the final appearance of their equipment as contributing to the character and interest of the general architecture of the building. Controlled expression of function is suggested as a guide to the desired design approach in exposed equipment (a ship's ventilator is suggested as a good example of this approach).

It is not felt that the size of exposed equipment is a significant factor in their architectural acceptability, and Component Contractors are advised not to penalize mechanical functioning or economy of equipment in the interests of size reduction. Besides equipment itself the arrangement of equipment is visually critical. Arrangements which form a direct expression of a regular and consistent mechanical system are to be preferred. All exposed equipment in design and layout shall be subject to approval by SCSD.

7-15 ATTACHMENT

Attachment, support, other than main structure, and weatherproofing of mechanical equipment shall be the responsibility of this Component Contractor. Cover flashings shall be the responsibility of this Component Contractor. Attachments shall meet the requirements of Title 21, California Administrative Code, Division of Architecture. This Component Contractor shall coordinate the detailed handling of attachment at points of support with the Structural Component Contractor.

The following is an extract from the Performance Specifications Category 6 (Structure) Article 6-16.

> "Inserts and holes necessary for attachment of components within the integrated sandwich shall be standard. If unit prices are required for attachments of components which are not part of

the integrated sandwich, this Component Bidder (Structural) shall provide requirements for a pricing schedule at evaluation period.

If special inserts, clips or holes are necessary for other components the cost will be negotiated and paid for by the Component Contractor needing these parts. The Structural Component Contractor shall give prices for such inserts, clips or holes insofar as they do not conflict with his component."

7-16 TYPES OF SPACE ACCORDING TO MECHANICAL SYSTEM

The spaces listed below are grouped into spaces of like mechanical requirement. Such spaces will not necessarily be grouped into single buildings. Figures are based on assumption that complete schools will be built. Building of increments may cause variation in these percentages, but it is not anticipated that this variation will be significant.

	% of Enclosed Building Area
7-17 General Academic	32.5
7-18 Administration & Guidance	5.0
7-19 Science (Laboratories)	10.0
7-20 Industrial Arts (shop areas)	9.0
7-21 Physical Education (activity)	10.5
7-22 Physical Education (locker and changing areas)	8.0
7-23 Music	3.0
7-24 Multi-Use Hall	5.0
7-25 Food Service (kitchen type space)	1.0
	84.0
7-26 Miscellaneous (toilets, storage, janitors, interior corridors, mechanical space)	16.0
	100.0

7-17 GENERAL ACADEMIC SPACE - (32.5% of enclosed building area)

a. Use:

This section embraces space usually thought of as typical classrooms, but includes art, business and library space. Activities are predominantly sedentary; groupings may take the form of:

		Design Occupancy
discussion groups	400-450 sq. ft.	23 sq. ft. per person
classroom groups	800-900 sq. ft.	25 sq. ft. per person
medium groups	1200-1800 sq. ft.	20 sq. ft. per person

		Design Occupancy
large groups	1800-3600 sq. ft.	20 sq. ft. per person
individual study	(subdivision within larger space)	1 student
individual and group project work	(subdivision within larger space)	1-6 students

b. Structure

General:

The maximum structurally unobstructed area will be approximately 7200 sq. ft. with an optimum roof span of 60' and a maximum bay size of 30' x 75'. This maximum unobstructed area will have a maximum length to width ratio of 2:1.

Horizontal Modules:

The horizontal structural module shall be 5'-0" x 5'-0". This 5'-0" module shall be used throughout in designing the structural components. The horizontal planning module will be 4 inches (4" x 4").

Vertical Module:

The vertical module of construction for both structure and planning shall be 12 inches; however not every increment of 12" will be used. The maximum depth allowed for the integrated sandwich (i.e., from the bottom of the ceiling to the top of the roof deck exclusive of insulation and roofing) shall be 36". The roof structure does not have to be in increments of the 12" module, but shall be located within the 36" depth. The integrated sandwich shall be the same depth throughout.

Changes of level of slabs on grade will be in increments of 2'-0" where they occur.

Ceiling height in this area will be 10'-0" or 12'-0". Floor-to-floor heights (for 2-story construction) will be 13'-0". See Appendix 1 to this specification for estimates of the various areas and quantities.

Provision for Mechanical Systems:

The following is an extract from the Performance Specifications Category 6 - Structure, Article 6-16B:

"The integrated sandwich shall provide for air distribution. Methods for minimum standards are outlined as follows:

Method A: The structure forming the duct space. Necessary duct areas will be dependent on detailed mechanical systems developed for the project, and the Component Contractor (Structural) shall coordinate with the mechanical Component Contractor to insure an efficient composite system of structure and air distribution.

The structure shall also be able to be penetrated (subject to structural limitations) for two purposes. First, penetrations for air distribution and control, as required by a specific mechanical system. Second, penetration required to accommodate access to parts of the mechanical system. Inserts, covers, or closures shall be provided for such penetrations and shall be of incombustible materials and meet any code requirements. Such exposed inserts, covers or closures shall be visually compatible with the system.

Method B: The structure permitting ducts to penetrate within the structural depth.

Method C: Structure not permitting duct penetration: such structure shall permit required duct work to pass beneath the structure within the 36" integrated sandwich.

Method D: The integrated sandwich forms a plenum space.

Method E: Any combination of the above."

Necessary duct areas will be dependent on detailed mechanical systems developed for the project, and this Component Contractor shall coordinate with the mechanical Component Contractor to insure an efficient composite system of structure and air distribution.

c. Flexibility and Module

Space in this category will be completely flexible. All interior partitions will have the potential to be moved to occur on modular lines on a planning increment of 4".

Corridors will not necessarily be defined by structure, lighting, or ceiling height. As partitions are rearranged, corridor space may become teaching space, or vice versa.

Minimum and Maximum Space - Mechanical Control

Minimum zone area is 450 sq. ft. Maximum clear space, single zone, is 3600 sq. ft. The 450 sq. ft. space may occur in any location permitted by the planning module.

Interior Space

Spaces with no exterior wall must be capable of efficient service by the mechanical system. Such spaces are not necessarily mechanically cooled, but must in any event conform to the specified environmental criteria. However, it is expected that interior spaces will form a minor portion of any building not serviced by mechanical cooling.

Relationship to Ceiling

Mechanical systems resulting in exposed equipment in the ceiling shall be coordinated with the ceiling and lighting configuration, whether superimposed or structural, and this

Component Contractor shall coordinate with the Lighting-Ceiling Component Contractor to insure an efficient composite system of Lighting, Acoustics, and Air Distribution.

Relationship to Demountable Partitions

Demountable partitions will not typically be available for use as vertical ducts. This does not rule out the possibility of the use of special partition type units as part of the mechanical system provided the planning flexibility requirements of the spaces can still be met. Any such unit shall relate to the partitions, and if designed for flexible spaces shall have the same order of flexibility as the demountable partitions. Refer to Interior Partition Specifications, Category 9, for further details of requirements in respect to partitions.

No particular restrictions are placed on the thickness of such a mechanical unit: typical partitions will probably be 40" or 48" in width.

Service Partitions

The system of demountable and fixed partitions shall have hollow service panels to house the following services: switches, communication system, TV jack, clock, telephone, thermostat if desired, etc. This Component Contractor will install services relating to the control portion of the mechanical system. The panel will be supplied by the interior partition Component Contractor. Design and location of cutouts for services shall be identical for the 10'-0" and 12'-0" high partitions. See Section 9-15.

Relationship to Floor

Mechanical systems resulting in penetrations of the floor slab must take account of the horizontal planning module.

Rearrangement of Components

Planning flexibility does not rule out rearrangements of the distribution components within the spaces to achieve flexibility. Such rearrangement will be evaluated on the basis of ease of rearrangement by school district personnel, effects on appearance of space after rearrangement, functional effects on surfaces after rearrangement, and any other consideration that a specific rearrangement might entail.

d. Lighting-Ceiling

This article refers to artificial lighting; daylighting is covered in an article on exterior walling.

Spaces in this section will be assumed to be subject to a maximum electrical load from lighting of 5.00 watts per square foot. Alternatively, wattage required for a particular lighting system bid for the project may be used for design, if known. This should be based on lighting Assembly A, B, or C + 10% wattage, whichever is greater. If more than 5.00 watts per square foot, then 5.00 watts per square foot may be used.

This load may be distributed as follows:

Assembly A1, A2* (Sections 8-11, 8-12, Lighting-Ceiling Specificatio
Semi-indirect lighting system. Lamp in the occupied space. Luminaires located as close to the ceiling plane as possible within the illumination requirements.

Assembly B1, B2*(Sections 8-13, 8-14, Lighting-Ceiling Specification)
Lighting system with light control elements over the entire ceiling plane. Ballast and lamps above ceiling. Suspension grids, frames, exposed (finished) structural members, or other opaque dividers between light control elements shall be no wider than 4", and shall be capable of receiving demountable partitions.

Assembly C1, C2* (Sections 8-15, 8-16, Lighting-Ceiling Specificatio
Direct lighting system. Ballast above ceiling. Light control elements if dropped below the ceiling plane, shall project no further than 4".

Following are extracts from the Lighting-Ceiling specifications, Category 8, which are especially relevant to this specification:

"Lighting dimensions and configurations shall be coordinated with and acknowledge the 5'-0" x 5'-0" structural module.

Assemblies shall include a ceiling throughout except that exposed structural members will be acceptable, provided they present a finished, fire resistive surface, are coordinated with the lighting components, and meet the illumination and acoustical requirements of the Lighting-Ceiling specification.

The ceiling or exposed structural system may assume shapes or forms other than a horizontal plane, providing that horizontal ceiling elements are available within the system to receive partitions.

The ceiling system shall be designed to allow electrical service to be routed from the space above the ceiling directly into fixed or demountable partitions.

Except where structural members form the ceiling, the ceiling system shall be designed so that access to the space above can be accomplished without damage or alteration to any component.

The ceiling system shall acknowledge the requirements imposed by a mechanical system and allow for any necessary devices. Individual grilles or registers will be by the mechanical Component Contractor, but if such items as linear diffusers in the ceiling grid or perforated tile are required for mechanical purposes, these shall be furnished by the lighting-ceiling Component Contractor and coordinated with the mechanical Component Contractor.

*Lighting-Ceiling Assembly nomenclature as used in Lighting-Ceiling specification, Category 8.

If the lighting-ceiling components perform mechanical functions (i.e., serving as plenums, ducts or portions of ducts, or as diffusers), this lighting-ceiling Component Contractor shall be responsible for the necessary sealing and balancing of the air supply. The capability of removing and/or utilizing lamp and ballast heat is a desirable feature."

Fire protection - plenum distribution systems

Current rulings by State of California fire protection authorities concerning ceiling plenum supply and return air systems are as follows:

1. When structure is fireproof, or directly protected, plenum system may supply or return air.
2. When structure is protected by ceiling, plenum may supply air. Return must be through duct or protected area. Plenum may return air if openings into it are protected by approved fire dampers.

e. Acoustic

Permissible background noise level in these spaces shall not exceed NC-30 or an 'A' weighting network reading of 40 db maximum. Testing will be in mock-up room described in Lighting-Ceiling specification, section 8-10A.

7-18 ADMINISTRATION & GUIDANCE (5.0% of enclosed building area)

a. Use

This section embraces space used as administrative offices, ranging from individual offices to general office space with an occupancy of up to 10 persons. Guidance space is primarily small offices and conference space. Activities are sedentary. Planning flexibility may require some of this space to be interchangeable with general academic space.

b. Structure

Similar to 7-17 (b.)

c. Flexibility and Module

Similar to 7-17 (c.) Some rooms may be required with individual control smaller than 450 sq. ft. See Appendix 1, section N, Group 7-18 for extent of this provision.

d. Lighting-Ceiling

Similar to 7-17 (d.)

e. Acoustic

Similar to 7-17 (e.)

7-19 SCIENCE (10.0% of enclosed building area)

a. Use

This space involves laboratory and project space. Home economics space is also included, involving laboratory space and oversize classroom space. Science laboratory equipment and home appliance equipment is typical for these spaces. Design occupancy 25 sq. ft. per person.

Exhaust ventilation shall be provided in connection with all equipment and processes which create any dusts, fumes, vapors, or gases, which may be injurious to the health of any frequenters exposed thereto. Exhaust systems serving this class of equipment and processes shall be separate from and independent of all other services and systems in the building.

Such systems (e.g. fume hoods, home appliance hoods, etc.) are not the responsibility of this Component Contractor, but his systems within these areas shall take account of the effect of any subsidiary systems therein. The exhaust rate of flow shall be assumed to be 75% of the supply air rate.

b. Structure
Notes in 7-17 (b.) will apply generally.

c. Flexibility and Module
Space in this section will be of limited flexibility. Plumbing walls, equipped laboratory benches, and areas of heat producing equipment will be fixed location, but partitions not used for utilities may be rearranged.

Corridors will not necessarily be defined by structure, lighting, or ceiling height, but may be assumed to exist for mechanical purposes.

d. Lighting-Ceiling
Notes on 7-17 (d.) apply generally.

e. Acoustic
Permissible background noise level in these spaces shall not exceed NC-35 or an 'A' weighting network reading of 45 db. maximum. Testing will be in mock-up room described in Lighting-Ceiling specification, section 8-10A.

7-20 INDUSTRIAL ARTS (Shop Areas) (9.0% of enclosed building area)

a. Use
This space embraces Industrial Arts space, primarily shop type use, but including some classroom, staff and storage space. Space character in the shop areas will approximate that of a modern industrial plant of the same character as the shop. In some instances part of the shop area may relate to Art Department.

Design Occupancy:
25 sq. ft./person (Classroom space 23 sq. ft./person)

Exhaust ventilation shall be provided in connection with all equipment and processes which create any dusts, fumes, vapors, or gases which may be injurious to the health of any frequenter exposed thereto.

Exhaust systems serving this class of equipment and processes shall be separate from and independent of all other services and systems in the building.

Such systems (e.g. sawdust collection) are not the responsibility of this Component Contractor, but his systems within these areas shall take account of the effect of any subsidiary systems therein. The exhaust rate of flow shall be assumed to be 75% of the supply air rate.

b. Structure

Notes in 7-17 (b.) will apply generally. Structure in these areas may be exposed even if this is not typical for other spaces. Exposed mechanical equipment will be acceptable within the spaces

c. Flexibility and Module

Space in this section will be fixed. Plumbing walls, equipped benches and areas of heat producing equipment will be fixed locations.

Corridors will not necessarily be defined by structure, lighting or ceiling height, but may be assumed to exist for mechanical purposes.

d. Lighting-Ceiling

Assume 4.00 watts per sq. ft. in these areas. Alternatively, wattage required for a particular lighting system bid for the project may be used for design, if known.

e. Acoustic

Permissible background noise level in these spaces shall not exceed NC 45 or an 'A' weighting network reading of 50 db.

f. Exterior Walls

Shop areas may have large exterior wall areas which at times are open to the outside, through use of large doors. Provision for local ventilating at these points shall be included. This space will probably not have mechanical cooling.

7-21 PHYSICAL EDUCATION (activity space) (10.5% of gross building area)

a. Use

Gymnasium type space for calisthenics, games, dance, and spectator sports. High degree of physical activity, plus at times assembly use. Smaller spaces will be used as apparatus rooms, dance studios, and special exercise space.

Occupancy

9 sq. ft./person, seated on bleachers, when space used for public sports events. 7 sq. ft./person when space used for assembly. This will be a relatively rare use.

b. Structure

Gymnasium span will be 90' or 110'. Roof height will be 25' to bottom of structure. Depth of structure will not exceed

60". Gymnasium may consist of two areas, formed from a large space divided by an operable wall or screen. Roof structure will be exposed. Exposed mechanical equipment will be acceptable.

c. Flexibility and Module

Space in this section will be clearly defined by the structure.

d. Lighting-Ceiling

Lighting will be direct with ballast and lamp in the occupied space. Assume 3.00 watts per sq. ft. Alternatively, wattage required for a particular lighting system bid for the project may be used for design, if known. Exposed structure will form the ceiling in these spaces.

e. Acoustic

See section 7-19 (e.)

7-22 PHYSICAL EDUCATION (locker & changing rooms) (8.0% of enclosed building area)

a. Use

Includes showers, dressing rooms, toilets, storage, equipment and staff rooms. Typical occupation for 1800 population school is 300 students in one period, divided into 150 boys, 150 girls in each locker room.

Ventilation to lockers shall be provided. This Component Contractor shall be responsible for delivery of air to points in floor slab or ceiling suitable for connection to lockers as required.

b. Structure

Notes in 7-17 (b.) apply.

c. Flexibility and Module

These spaces shall be fixed.

d. Lighting-Ceiling

Assume 2.00 watts per sq. ft. Alternatively, wattage required for a particular lighting system, bid for the project, may be used for design, if known.

In addition, exposed structure may form the ceiling. Exposed mechanical equipment may be acceptable.

e. Acoustic

See notes in 7-20 (e.)

7-23 MUSIC (3.0% of enclosed building area)

a. Use

Choral, orchestral, and individual or small group work

Typical groups:
room area 2400 sq. ft., groups up to 120 persons.
room area 120 sq. ft., groups up to 6 persons.
room area 80 sq. ft., practice groups up to 4 persons.

Room smaller than 450 sq. ft. may be grouped for control purposes.

b. Structure
Notes on 7-17 (b.) apply.

Sloped floors may be used in this area. This will result in an increase of cubic volume within the spaces over the typical ceiling height volumes.

c. Flexibility and Module
Space in general will be fixed. Some flexibility may be involved in office and storage areas: this would be on same basis as space in 7-17 (c.).

d. Lighting-Ceiling
Similar to 7-17 (d.).

e. Acoustic
Permissible background noise level in these spaces shall not exceed NC 25 or an 'A' weighting network reading of 35 db.

7-24 MULTI-USE HALL (5.0% of enclosed building area)

a. Use
Use as assembly hall for performances, dining area, and also as teaching space, as two or more separate group teaching spaces. Also related facilities, platform, lobby, toilets, dressing rooms, storage.

Design Occupancy 15 sq. ft. per person.

b. Structure
Notes in 7-17 (b.) apply.

Structure may be exposed.

c. Flexibility
Hall may have operable walls. Other flexibility not applicable.

d. Lighting-Ceiling
Notes on 7-17 (d.) apply.

e. Acoustic
See note on 7-17 (e.).

7-25 FOOD SERVICE (kitchen type space) (1.0% of enclosed building area)

a. Use
Kitchen and snack bar capable of providing hot lunch and/or snack bar service for up to approximately 1200 persons. Kitchen and snack bar not necessarily in same location.

Accommodation will be equivalent in standard to a good quality commercial installation for the same facilities.

Particular attention shall be paid to materials in any exposed equipment, ducts, or grilles. Non-corroding materials or finishes shall be used.

b. Ventilation Standards

Air volume maintained shall be not less than 2 cfm per sq. ft. of floor area.

Exhaust systems serving kitchens shall be direct to the outside air and separate from and independent of all other services and systems in the building.

This Component Contractor shall be responsible for the main system of ventilation in this area. Hoods and fans for specific heat producing appliances are not included but the effect of these subsidiary systems shall be allowed for in the main system equipment design. The exhaust rate of flow shall be assumed to be 100% of the supply air rate.

When single hoods are provided by others for kitchen exhaust, the velocity of air motion over the face area of the hood will be not less than 60 f.p.m. For double hoods the velocity over the area between the inner and outer hoods shall be not less than 250 f.p.m. using a four inch width of opening as a basis.

7-26 MISCELLANEOUS SPACES (16.0% of enclosed building area)

Toilets
Storage
Janitorial spaces
Corridors - interior
Corridors - exterior
Mechanical spaces

In general, these spaces are of low or brief occupancy and have no particular mechanical factors to be considered.

Spaces having specific code requirements - such as toilets, mechanical spaces - shall be designed to meet those code requirements.

7-27 THERMAL ENVIRONMENT - OBJECTIVES AND CRITERIA

General

The objectives and criteria outlined below have been determined with particular reference to the academic spaces. These spaces impose the most stringent requirements on the heating and ventilating system. Notes which follow give variations of these criteria which may apply to other type spaces.

7-28 OBJECTIVES

A. Control and maintenance of air temperatures within occupied space.

1. Heating
2. Cooling

B. Uniform air temperature at breathing line within occupied space.

C. Adequate ventilation in occupied space.

1. Total air circulation
2. Outside air, air distribution, filtering, odor control

D. Equipment noise level below acceptable maximum for type of space.

E. Simple and adequate control.

F. Rapid response of system to maintain thermal environment.

G. Safety of operation.

7-29 PERFORMANCE CRITERIA FOR OBJECTIVES

A. Control and maintain air temperatures within occupied space.

1. Heating
Group 7-17, 7-18, 7-19, 7-23, and 7-24: 73 degrees F. when the outside temperature is above or equal to the outside design temperature.

For Group 7-20 (shop areas) criterion is 72°

For Group 7-21 (physical education, activity) criterion is 68°

For Group 7-22 (locker rooms) criterion is 75°

For Group 7-25 (kitchen) criterion is 68°

2. Cooling
At least 75° F. but not lower than 20° below the outside design temperature when the outside temperature is below or equal to the outside design temperature.

3. Outside Design Temperature
Design temperatures tabulated below are for bidding purposes and to give Component Contractors a general indication of the design temperatures for geographic locations within the project. Precise design temperatures will be selected by the designers of individual schools, and Component Contractors shall be prepared

to give information about their equipment performance to enable school designers to utilize equipment to its best advantage.

The design temperatures were extracted from: "Recommended Outdoor Design Temperatures, Southern California, Arizona, Nevada," Copyright 1960 by the Southern California Chapter of the ASHRAE, reprinted 1963.

"Recommended Outdoor Design Temperatures, Northern California," Copyright 1963 by the Golden Gate Chapter of the ASHRAE.

HEATING

Place	Elevation Feet	Design Temperature °F	Average Wind Velocity
Sacramento	23'	31°	9.2 mph
San Juan (Sacramento)	23'	31°	7.2 mph
East Side (San Jose)	70'	35°	-
Santa Cruz	125'	33°	-
Simi Valley (Ventura County)	51'	31°	6.4 mph
Glendora (Los Angeles)	822'	30°	6.4 mph
La Puente " "	320'	30°	6.4 mph
Placentia " "	323'	35°	6.4 mph
Fullerton " "	330'	35°	6.4 mph
Excelsior " "	312'	37°	6.4 mph
Huntington Beach "	40'	35°	6.4 mph
San Dieguito (Encinitas)	60'	38°	6.3 mph

COOLING

Place	Design Temperature °F		Daily Range °F	Wind Velocity
	D.B.	W.B.		
Sacramento	97°	70°	33°	Med.
San Juan (Sacramento)	97°	70°	33°	Med.
East Side (San Jose)	90°	67°	26°	Med.
Santa Cruz	85°	66°	28°	Med.
Simi Valley (Ventura Count)	89°	67°	21°	Med.
Glendora (Los Angeles)	100°	72°	34°	Med.
La Puente " "	100°	73°	32°	Med.
Placentia "	95°	71°	24°	Med.
Fullerton " "	95°	71°	24°	Med.
Excelsior " "	93°	71°	22°	Light
Huntington Beach "	85°	69°	14°	Med.
San Dieguito (Encinitas)	86°	68°	12°	Light

B. Uniform air temperatures at breathing line within occupied space.

Maintain breathing line air temperature within 2 degrees F. above and 2 degrees F. below thermostat settings. Breathing line is defined as 48" above the floor, not less than 2 ft. from the outside wall.

C. Adequate ventilation in occupied space.

1. Total air circulation
   The total air circulation rate within a given zone shall be the maximum of the rates determined by the following criteria. This procedure shall be followed whether mechanical cooling is contemplated or not.

   a. Calculate total heat gains from transmission, solar radiation and internal loads. Air flow rate shall be determined from cooling coil performance figures, or by any other method. The temperature of the supply air shall not be lower than 20° F below the design room temperature.

   b. Calculate total internal gains. Air flow rate shall be as required to keep the room temperature rise due to the internal gains to a maximum of 10° F. above outside air temperature. This criterion will not apply if mechanical cooling is used.

   c. Total air supply rate shall not be less than 30 c.f.m. per person.

   d. Total air supply rate shall not be less than the rate which may be required by Codes and Standards or by special ventilating conditions specifically called for elsewhere in this specification.

2. Outside air, air distribution, filtering, and odor control.

   a. Outside air
   Provide a minimum of 8 c.f.m. per person at maximum heating or cooling loads. (Introduction of outside air, according to applicable codes: otherwise on a rational basis, as discussed in Chapter 6 of the ASHRAE Guide, 1960 Edition).

   b. Air distribution
   Air motion passing over people within occupied space shall provide air velocities ranging between 20 to 50 f.p.m. Air not at the breathing line, but anywhere else where occupants may normally be conscious of air motion, at a temperature difference not greater than 5° from room temperature may range up to 70 f.p.m.

c. Filtering
All air supplied to occupied space shall be passed through cleanable or replaceable air filters. Systems utilizing room air to temper supply air are acceptable without additional filtering, provided character of spaces is such that odor problems will not thereby be created.

d. Odor control
Provide for sufficient odor-free outdoor air per pupil to provide adequate dilution of odors at all design conditions. Alternatively re-circulated room air that has been properly deodorized may substitute for all or part of the outside air used for odor control. Bidders using this method of odor control shall describe for evaluation their method of treating air. Importance of effective odor control is emphasized: particular attention shall be paid to gymnasium, multi-use, kitchen, home economics, laboratory and locker room areas.

D. Sound Levels

See notes in sections 7-17 to 7-26 relative to requirements for specific spaces in project buildings.

It is realized that noise in a system may be a function of the general design of the building, causing awkward and constricted duct layout, diffuser or return grille layout, or extreme velocities for the type of system. The bidder shall call out his recommendations and limitations for his system to obtain good acoustic conditions at evaluation stage.

E. Simple and Adequate Control

Systems shall be capable of simple and adequate control to maintain the thermal levels called for in this specification. Rooms shall have individual controls as required: thermostats need not be operable from within the academic spaces.

All sequences of the control cycle applicable to the specific systems utilized - pick-up heating, heating with minimum ventilation, maximum ventilation, cooling and mechanical cooling shall be sequence integrated and interlocked to provide specified control limits with fixed differential temperature between heating and cooling to prevent override or excess suppression.

In the interests of flexibility, consideration shall be given to thermostat location elsewhere than on walls.

Control systems shall take into account perimeter zone conditions in relation to flexibility requirements of system. (Note: see Bidding Instructions, B3 and Bidding Sheets).

For general discussion of other aspects of control see Appendix 1 Section B.

F. Safety of Operation

Systems shall include the minimum safety features as required by the governing authorities. Component Contractor shall be responsible for safety of installation and operation of his systems, and shall provide for school district personnel a manual to provide full details for operation of all mechanical systems. Safety problems created by materials or systems, supplied by other Component Contractors, shall be the responsibility of those contractors.

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

APPENDIX 1
BIDDING INSTRUCTIONS

CATEGORY 7 - HEATING, VENTILATING & COOLING

A. Organization of the Project for Bidding

The following is the general organization of the project for purposes of bidding the Heating, Ventilating and Cooling systems. Refer to Part 1, Information to Bidders for general information on Project bidding procedures, coordination of component categories before bidding, evaluation submission, etc.

The 1,400,000 sq. ft. of enclosed area upon which bidding is based is broken down by estimated percentages, into the 10 types of spaces outlined in Section 7-15 and described in detail in Sections 7-17 to 7-26.

These types of space are broken down into percentages of different areas for control purposes. For each area an estimate is given of

(a) its ceiling height
(b) its linear footage of perimeter wall
(c) its design population

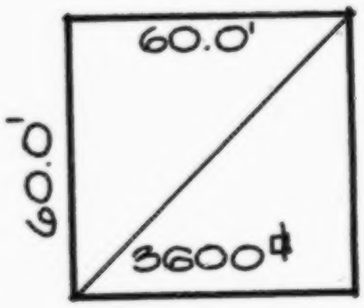
In addition the 10 types of space are further broken down into estimated building sizes and percentages of each size. Building sizes are divided into 10 different sizes ranging from 2 mechanical service modules to 11 mechanical service modules in size.

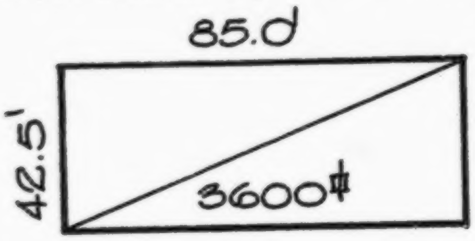
A Mechanical Service Module is the unit of mechanical service for this project and it represents the smallest area of service with a single unit of air treatment equipment, and is also the unit for computation of building size for mechanical system purposes. It is an area of 3600 sq. ft. It shall be coordinated with and acknowledge the 5'-0" x 5'-0" structural module.

B. The Mechanical Service Module (1M)

1. General

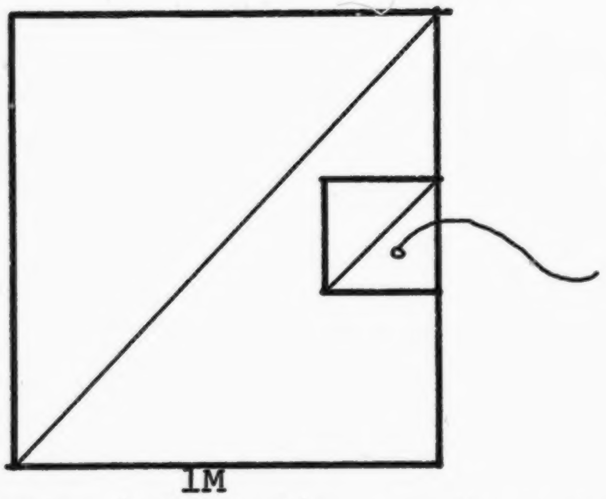
Area = 3600 sq. ft.
Dimensional Limits: length/breadth ratio from 1:1 to 2:1 (except where mechanical system makes other ratios desirable).





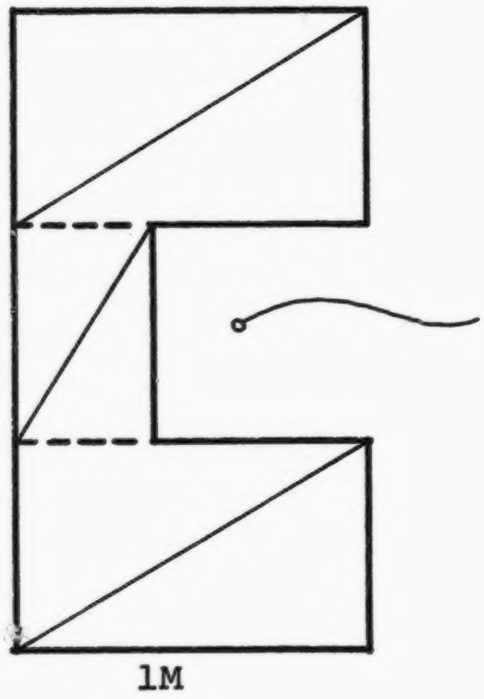
Cutouts, indentations, or other irregular shapes may form part of the architectural plan form of a Mechanical Service Module.

Cutouts, indentations, etc., less than 400 sq. ft. in area shall come out of the 3600 sq. ft. module



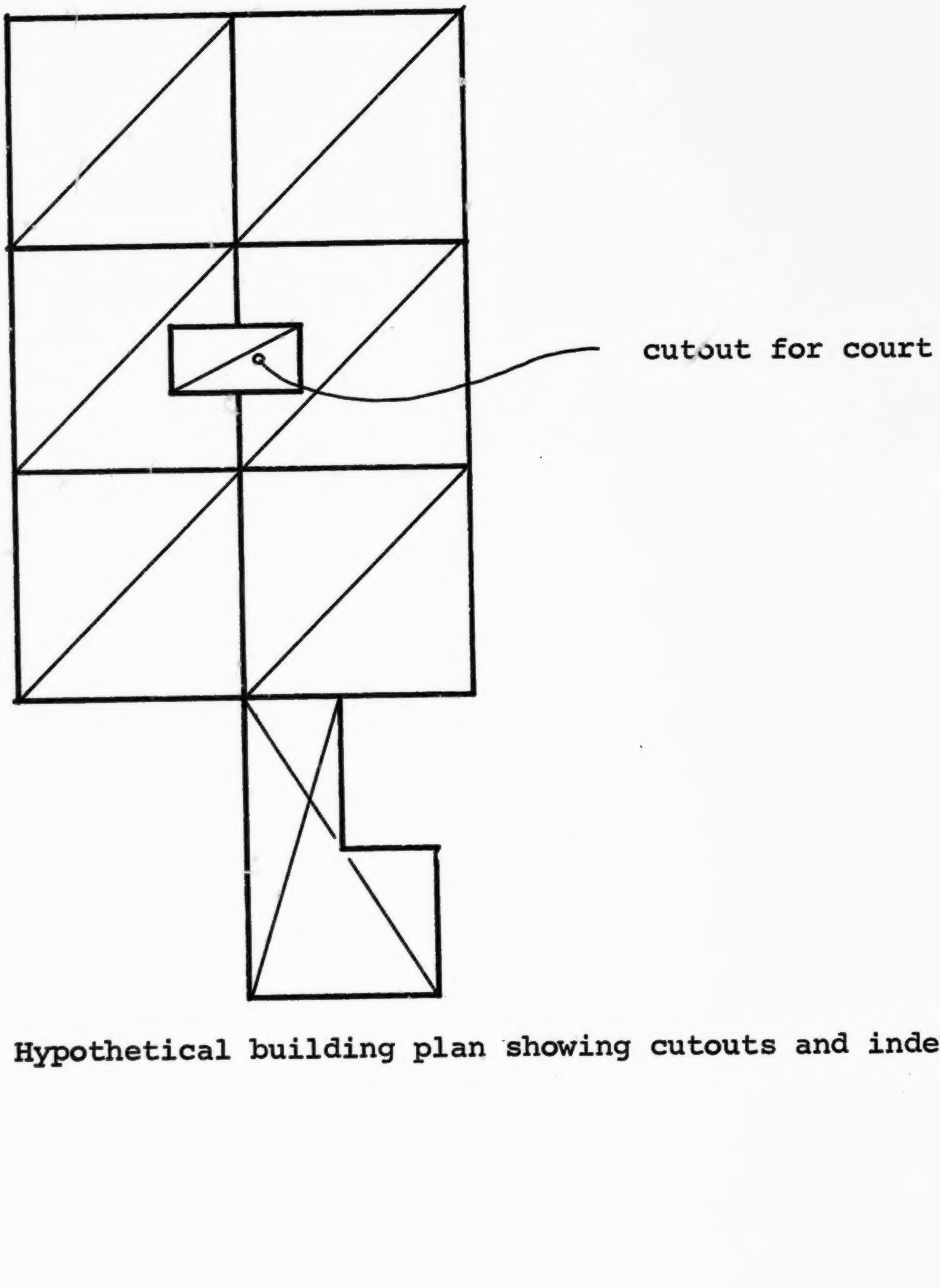
indentation not to exceed 400 sq. ft.

Cutouts, indentations, etc., more than 400 sq. ft. shall not come out of the 3600 sq. ft. module.



cutout more than 400 sq. ft.

It is realized that extensive use by architects of cutouts and indentations in plan form could impose serious handicaps on some mechanical system layouts. Bidders shall indicate the effect of such configurations on their proposed system and shall call out, in their submission material for evaluation, limitations upon which their bids will be based. The degree of limitation which is acceptable will be called out after the evaluation submission. It is anticipated that considerable limitation will be acceptable, particularly if the alternative will be appreciably inflated bids.



Hypothetical building plan showing cutouts and indentations.

2. Control Zones

A control zone is a space defined by walls, ceiling, and floor, capable of individual environmental control, independent of adjoining spaces. The degree of zone control neccessary may be a function of a specific mechanical system. It is desired that comfort conditions may be obtained in the spaces with the minimum of zone control.

For control purposes the Mechanical Service Module may contain up to 8 control zones of 450 sq. ft. each. These zones may occupy any spaces allowable by the planning module of the building system, and are subject to rearrangement by use of demountable or moveable partitions. Zones may also be any size over 450 sq. ft. permitted by the planning module. No single space in the academic area will be over 3600 sq. ft. in area. Other spaces (gymnasia, etc.) may be over 3600 sq. ft. but are not subject to the flexibility demands of the academic spaces.

Adjoining small rooms, each of which may be smaller than 450 sq. ft. in area, which have common exposures and similar thermal load conditions, shall be grouped together to form one or more common zones.

Groups of interior spaces, each of which may be larger than 450 sq. ft. in area, which have similar thermal load conditions, may form a single large zone, providing larger variations in temperature could be tolerated.

Estimated relative sizes of zones and their frequency of occurrence is outlined below, in the information on each of the 10 types of space.

3. Zones, Interior and Exterior

Interior zones are spaces which have no exterior wall, or where the heat gain or loss through the exterior wall is computed to be of negligible quantity relative to the size, occupancy, and other heating or cooling load of the space.

Control zones may involve space which is all exterior zone, all interior zone, or a combination of the two.

Limitations are outlined below relating to allowable heat gain through solar load, and standards of insulation for exterior walls. This Component Contractor is responsible for assessing the significance of interior and exterior zones, and for providing equipment which may be applied to maintain specified conditions under all zoning situations.

A Mechanical Service Module may be served by

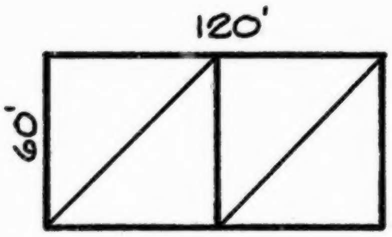
a. a self-contained package unit
b. a subdivision of a building-size unit
c. a subdivision of a school-size central system
d. any combination of the above.

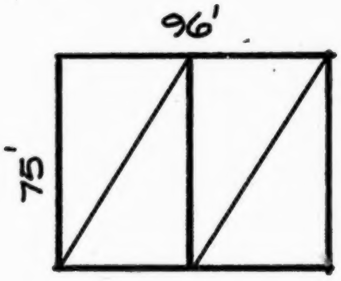
The component bidder shall decide which of the above approaches he proposes to use for this project.

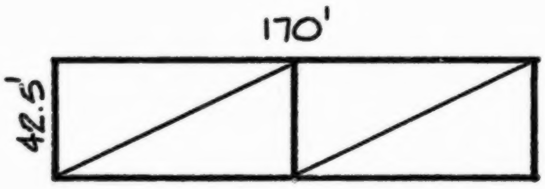
C. Building Sizes and Dimensional Limits

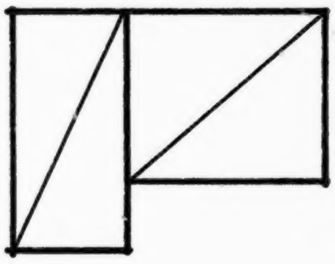
Shown below are the ten building sizes which comprise the range of building sizes available for the project schools. Diagrams show the range of dimensional variation which the buildings may assume. These diagrams are intended to give an indication of the types of building configuration to be expected. Not all possible configurations are shown.

Size 7200 sq. ft.
2M 2 mechanical service modules
Hypothetical building configurations. Not all possible configurations are shown.

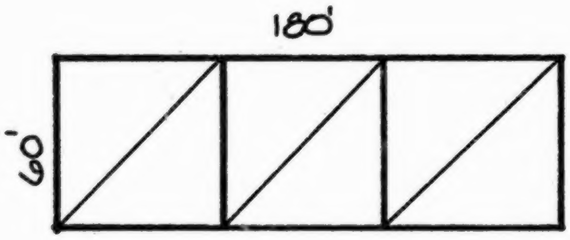


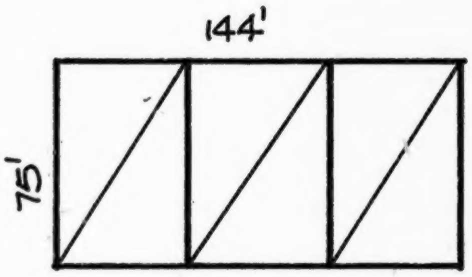


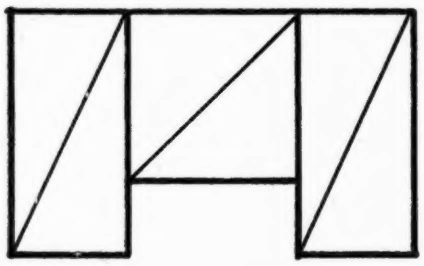




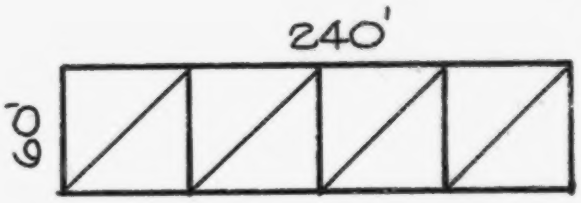
Size 10,800 sq. ft.
3M 3 mechanical service modules
Hypothetical building configurations. Not all possible configurations are shown.

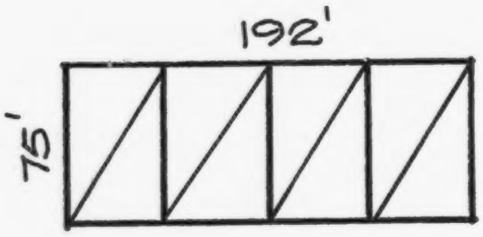


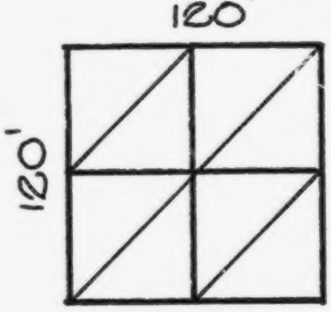


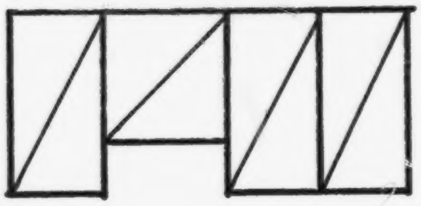


Size 14,400 sq. ft.
4M 4 Mechanical Service Modules
Hypothetical building configurations. Not all possible configurations are shown.



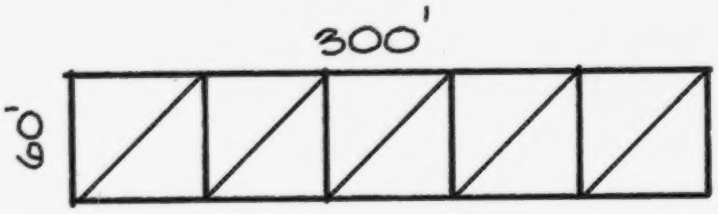


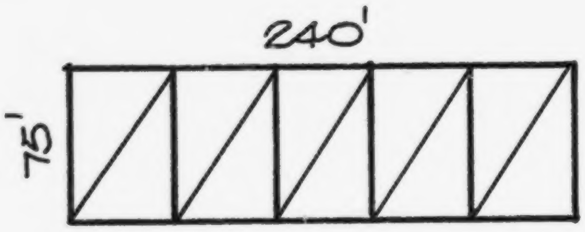


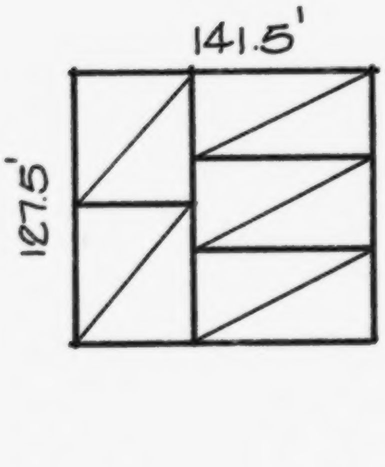


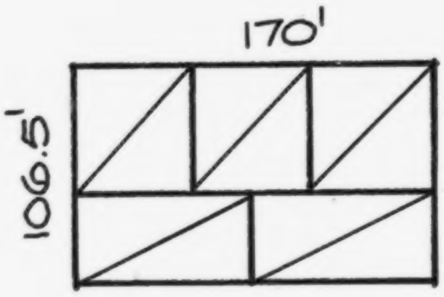
Irregular

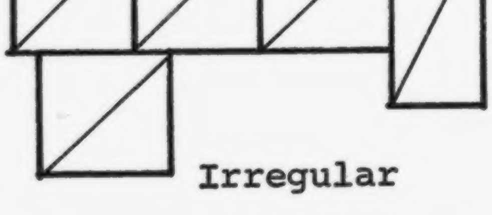
Size 18,000 sq. ft.
5M 5 Mechanical Service Modules
Hypothetical building configurations. Not all possible configurations are shown





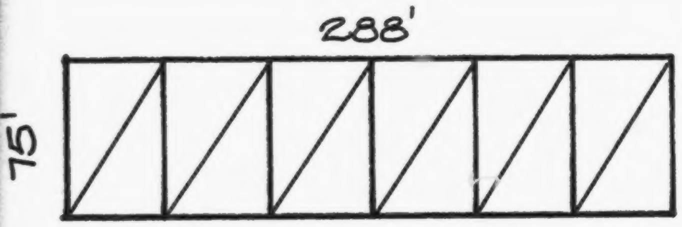


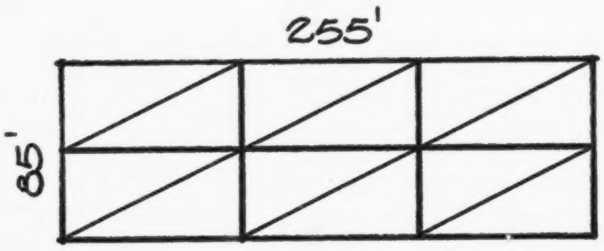


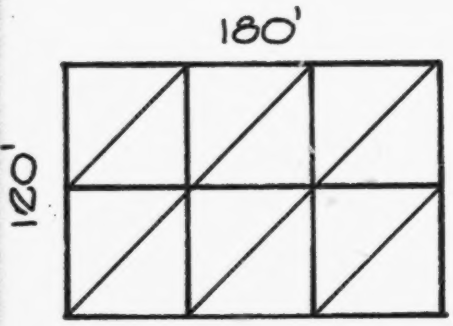


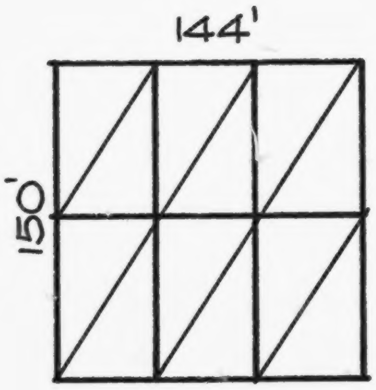
Irregular

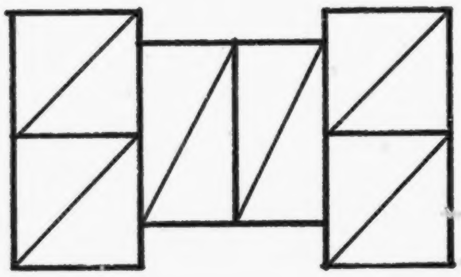
Size 21,600 sq. ft.
6M 6 Mechanical Service Modules
Hypothetical building configurations. Not all possible configurations are shown.





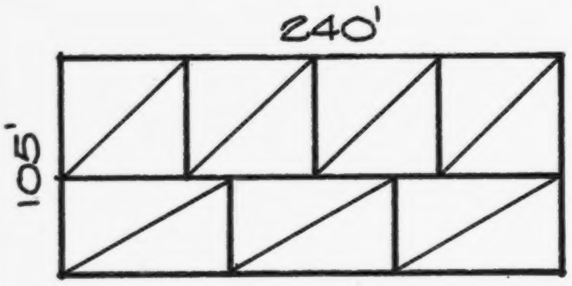


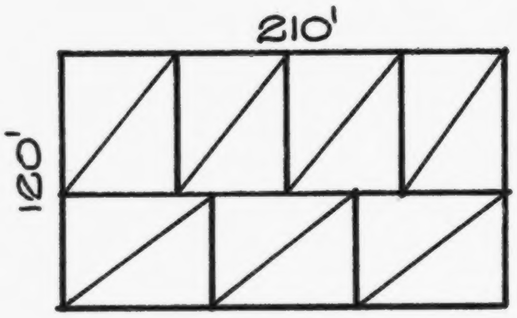


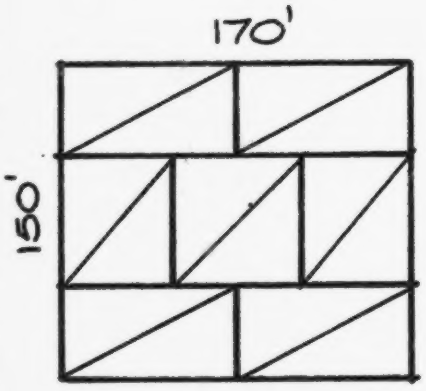


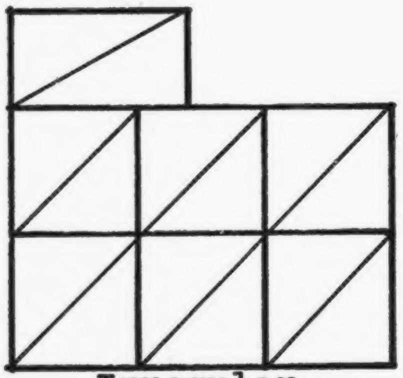
Irregular

Size 25,200 sq. ft.
7M 7 Mechanical Service Modules
Hypothetical building configurations. Not all possible configurations are shown.



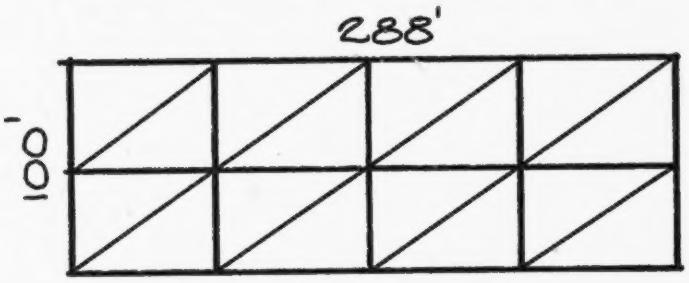


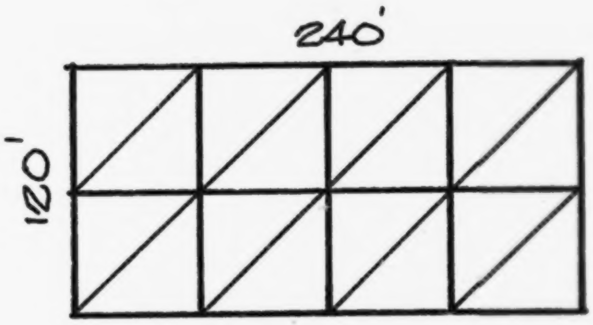


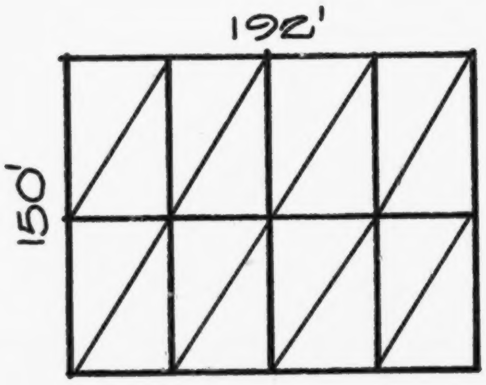


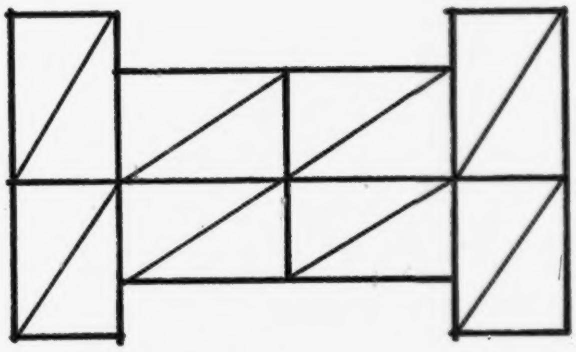
Irregular

Size 28,800 sq. ft.
8M 8 Mechanical Service Modules
Hypothetical building configurations. Not all possible configurations are shown.



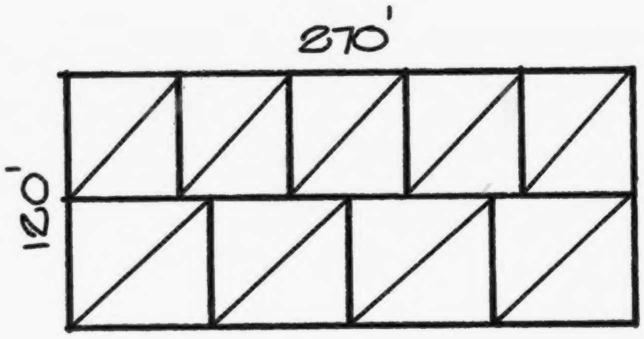


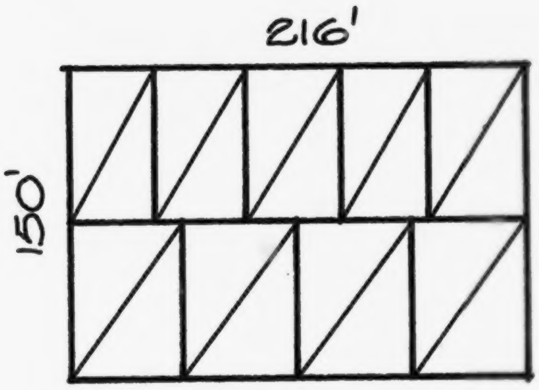


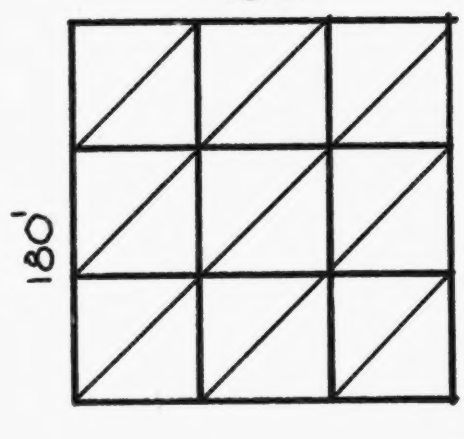


Irregular

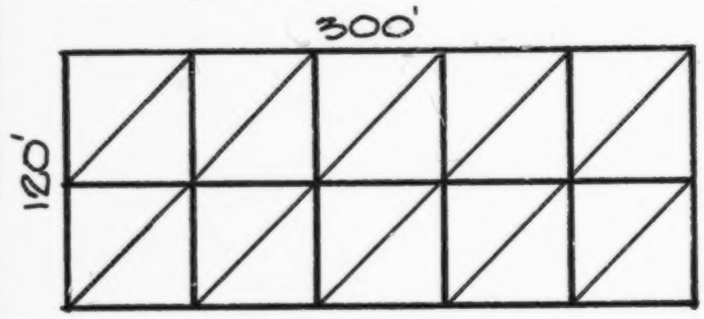
Size 32,400 sq. ft.
9M 9 Mechanical Service Modules
Hypothetical building configurations. Not all possible configurations are shown.

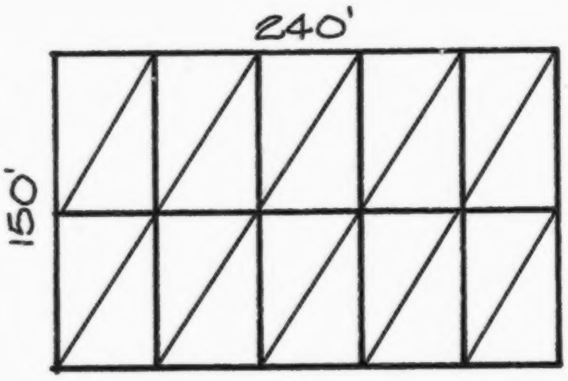


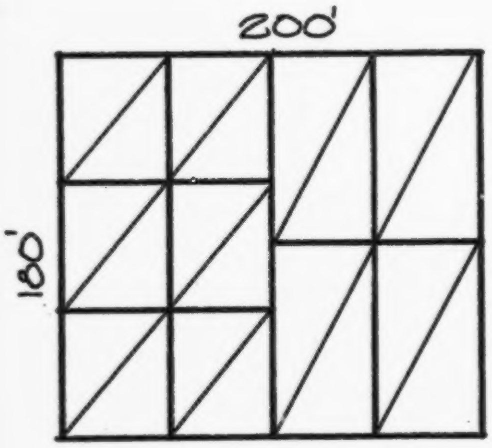


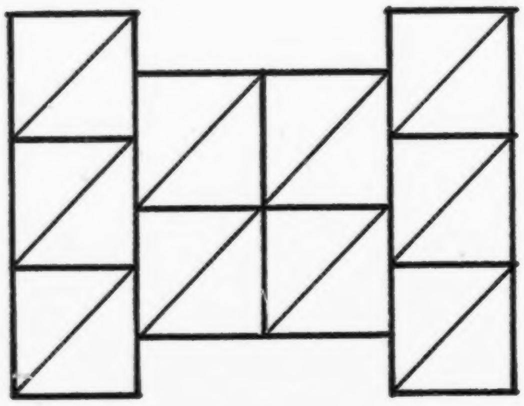


Size 36,000 sq. ft.
10 M 10 Mechanical Service Modules
Hypothetical building configurations. Not all possible configurations are shown.

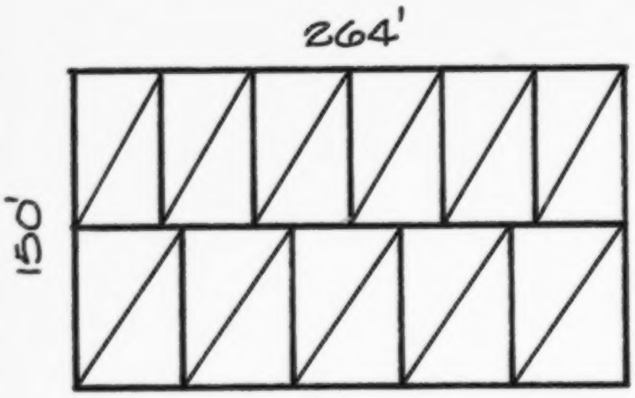


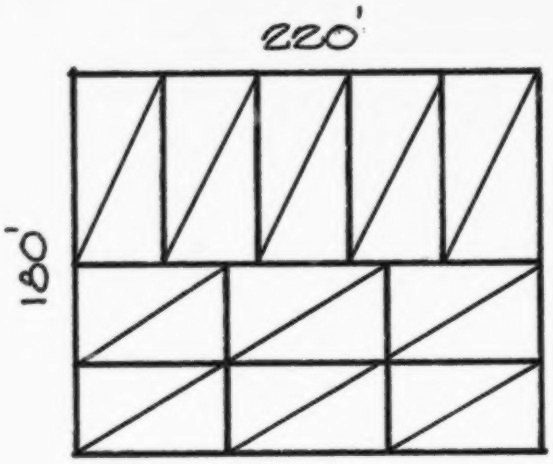


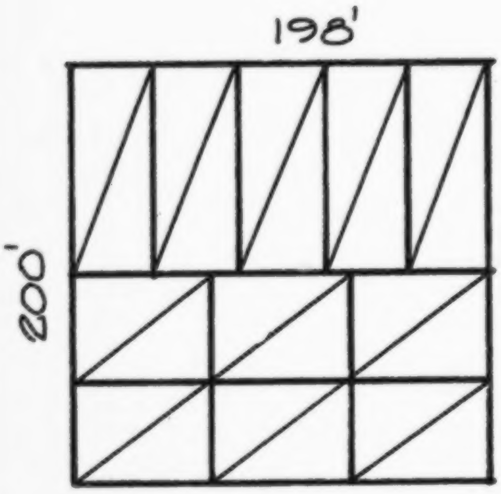


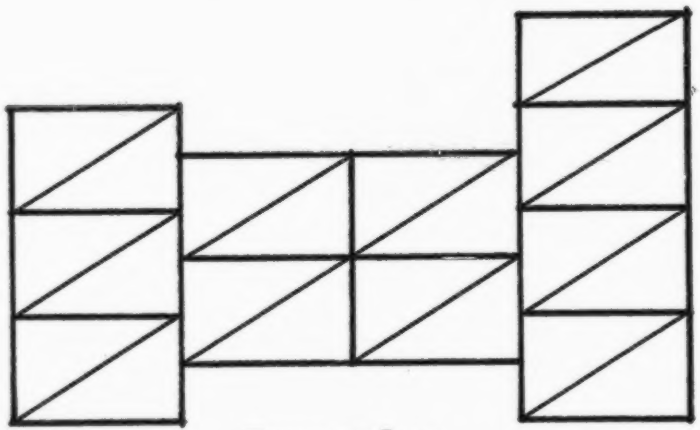

Irregular

Size 39,600 sq. ft.
11M 11 Mechanical Service Modules
Hypothetical building configurations. Not all possible configurations are shown.








Irregular

D. Buildings - Distance Apart

Average distance between immediately adjacent buildings shall be assumed as 35 feet.

E. Utilities - Location

All utilities assumed to be available at one building of the complex (Component Contractor is not responsible for utility run from site boundary to first building).

F. Location of Projects

Total enclosed area: 1,400,000 sq. ft.

% area:		
	in Sacramento	16.5%
	San Jose	14.5%
	Santa Cruz (coastal)	6.5%
	Los Angeles (coastal)	11.0%
	Los Angeles (central)	48.0%
	San Diego (coastal)	3.5%
		100.0%

G. Operating Cost

Component Contractor shall submit as part of his proposal for evaluation a statement on the expected operating costs of his system. This statement should include data on anticipated power consumption, life of documents, and ease and frequency of periodic maintenance.

Operating time shall be assumed as follows:

Months	Days	Hours	Occupancy
October through June	5	8 a.m. - 5 p.m.	full
October through June	5	5 p.m. - 10 p.m.	half
July through September	2.5	8 a.m. - 5 p.m.	full
July through September	2.5	5 p.m. - 10 p.m.	half

H. Utilities - Tariff Rates

Listed below are the utility companies providing service to the project school districts, and the tariff rates which apply.

School District	Electricity Service	Rate	Gas Service	Rate
San Juan	S.M.U.D.	Gen.Service	P.G.E.	G.2 or G.4
Sacramento City	S.M.U.D.	Gen.Service	P.G.E.	G.2 or G.4
Washington Union	P.G.E.	A-13	P.G.E.	G.4
East Side	P.G.E.	A-13	P.G.E.	G.3
Santa Cruz	P.G.E.	A-21	P.G.E.	G.21
Simi Valley	So.Cal.Ed.	A-7	So.Co.Gas	G.7
La Puente	" " "	A-7	" " "	G.2
Glendora	" " "	A-7	" " "	G.2
Placentia	" " "	A-7	" " "	G.2
Excelsior	" " "	A-7	" " "	G.2
Fullerton	" " "	A-7	" " "	G.2
Huntington Beach	" " "	A-7	" " "	G.3
San Dieguito	San Diego G.&E.	A-3 or A-4	San Diego G. & E.	G.3 or G

S.M.U.D. - Sacramento Municipal Utility District
6201 S Street, P. O. Box 2391, Sacramento 11, Calif.

P.G. E. - Pacific Gas & Electric Company
San Francisco, California

So.Cal.Ed. - Southern California Edison Co.
Edison Bldg., P. O. Box 351, Los Angeles, Calif.

So.Co.Gas - Southern Counties Gas Co.,
720 W. 8th Street, Los Angeles, Calif.
P. O. Box 2736, Terminal Annex, Los Angeles 54, Calif.

So.Calif.Gas - Southern California Gas Co.,
Los Angeles, Calif.

San Diego G. & E. - San Diego Gas & Electric Company
P. O. Box 1831, San Diego 12, Calif.

Typical Rates:

Typical rates for gas for a project school is as follows:
(extracted and abbreviated from P.G.E. rate G.4)

Per meter per month	1100 BTU
First 200 cu ft. or less	$1.463
Next 2300 cu ft. per 100 cu ft.	7.98¢
Next 17,500 cu ft. per 100 cu ft.	7.21¢
Next 80,000 cu ft. per 100 cu ft.	6.54¢
Next 4,900,000 cu ft. per 100 cu ft.	6.37¢
Over 5,000,000 cu ft. per 100 cu ft.	6.08¢

Typical electricity rates for a project school is as follows:
(extracted and abbreviated from P.G.E. rate A-13)

Energy Charge	
First 6000 kwh. per meter per month	2.64¢ per kwh.
For all excess over 6000 kwh. per month:	
First 50 kwh. per kw. of billing demand	2.22¢ per kwh.
Next 150 kwh. per kw. of billing demand:	
First 100,000 kwh.	1.28¢ per kwh.
Balance	.91¢ per kwh.
Next 100 kwh. per kw. of billing demand	.91¢ per kwh.
All excess	.65¢ per kwh.

It is anticipated that there will be little or no increase in rates over the period of design and construction of the project schools.

I. Exterior Walls

Requirements for exterior walls will be specified later as another component category. At this time any provisions required for mechanical systems in exterior walls will be built into the specifications for those components.

An average U value of U = 0.25 should be assumed for all opaque exterior walling in this project.

A variety of exterior wall materials will be used. Anticipated materials are: concrete, concrete block, brick, insulated panels, stucco panels, ceramic panels.

J. Roof Insulation

Total coefficient of transmission from outside surface to inside surface including roofing, insulation, and structural deck will be not more than U = 0.10 based on outside wind velocity of 15 m.p.h.

K. Solar Heat Gain Through Glass Walls

Architects will design exterior walls to limit solar heat gain through glass to a maximum of 6000 BTU/hr allowable through any 200 sq. ft. of glass having any orientation.

L. Mock-up Buildings

This contractor is responsible for work on mock-up buildings. This will involve:

a. Coordination with other Component Contractors and SCSD in relation to the mock-up building program as it develops.
b. Supply and installation of equipment in this component category, and its adjustment, testing, and detailed modification to satisfy performance criteria and efficient composite interaction with other component categories.
c. Payment for work not part of the Component Contractor's work. This payment will be pro-rated relative to each Component Contractor's share of the general contract.

For further information on mock-up buildings program see Part 4, Information and Conditions Applicable to Development Phase of Project.

M. Space and Building Make-Up by Types

All sizes and quantities following are estimates, to enable unit prices to be derived from lump sum bids. At the time of the general contracts for the individual buildings unit prices will govern, related to actual sizes and quantities in the fully drawn and detailed buildings.

These figures are based on the assumption that complete schools will be built, and do not take account of the fact that some schools will be built in increments. It is not anticipated that this will create a significant change in these figures for bidding purposes.

These figures represent the size and make-up of spaces upon which bids will be based.

Group 7-17 (General Academic) Design Occupancy - as noted

Exterior Spaces (refers to space requiring individual control. See below for estimate of number & size of buildings.)

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)	Design Occupancy (sq.ft./person)
3600	9	32,400	12'-0"	90	20
2760	9	25,020	12'-0"	90	20
1800	12	21,600	12'-0"	60	20
1550	9	13,950	12'-0"	60	20
1550	11	17.050	12'-0"	32	20
1350	17	23,000	10'-0"	40	20
1200	11	13,200	10'-0"	52	20
1080	11	11,880	10'-0"	36	25
900	57	51,300	10'-0"	30	25
800	52	41,600	10'-0"	32	25
800	36	28,800	10'-0"	56	25
700	35	24,500	10'-0"	30	23
700	17	11,900	10'-0"	60	23
560	18	10,440	10'-0"	40	23
560	9	5,220	10'-0"	16	23
450	44	19,800	10'-0"	16	23
450	9	4,050	10'-0"	36	23
TOTAL	366	355,710			

Interior Spaces (no perimeter walls)

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height		Design Occupancy (sq.ft./person)
900	38	34,200	10'-0"	-	25
800	19	15,200	10'-0"	-	25

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height		Design Occupancy (sq.ft./person)
700	63	44,100	10'-0"	-	23
450	35	15,750	10'-0"	-	23
TOTAL	155	109,250			

TOTAL GROUP 7-17 464,960

Group 7-17 BUILDINGS

7	@	7,200 sq. ft.	50,400	sq. ft.
4	@	7,200 ground floor of 2 storey	28,800	sq. ft.
5	@	10,800 sq. ft.	54,000	sq. ft.
4	@	14,400 sq. ft.	57,600	sq. ft.
1	@	18,000 sq. ft.	18,000	sq. ft.
2	@	21,600 sq. ft.	43,200	sq. ft.
1	@	25,200 sq. ft.	25,200	sq. ft.
7	@	32,400 - 39,600 sq. ft. (average 36,000)	252,000	sq. ft.
		TOTAL	529,200	sq. ft.

Note: Difference between total building	529,200	sq. ft.
area and Total Group 7-17 floor	464,960	sq. ft.
area is miscellaneous space (Group 7-26)	64,740	sq. ft.

Science laboratories may be combined within academic spaces in a single building. This will tend to increase the number of large area buildings in the project.

Group 7-18 Adminstration & Guidance Design Occupancy - 23 persons per sq. ft.

Exterior Spaces

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)
1280	9	11,520	10'-0"	64
800	11	8,800	10'-0"	80

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)
700	11	7,700	10'-0"	44
600	9	5,400	10'-0"	70
600	9	5,400	10'-0"	24
450	9	4,050	10'-0"	44
340	9	3,060	10'-0"	32
240	9	2,160	10'-0"	24
TOTAL	76	48,090		

Interior Spaces (no perimeter wall)

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height
600	18	10,800	10'-0"
400	18	7,200	10'-0"
200	9	1,800	10'-0"
TOTAL	45	19,800	
TOTAL GROUP 7-18		67,890	

Group 7-18 **BUILDINGS**

9	@	7,200 sq. ft.	64,800 sq. ft.
1	@	10,800 sq. ft.	10,800 sq. ft.
		TOTAL	75,600 sq. ft.

Note: Difference between total building area and Total Group 7-18 floor area is miscellaneous space (Group 7-26).	75,600 sq. ft. 67,890 sq. ft. 7,710 sq. ft.

Group 7-19 Science Laboratories (including Home Economics)

Design Occupancy - 25 sq. ft. per person

Exterior Spaces

Size (sq.ft.)	No. of Spaces	Total Area (sq. ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)	Notes
1450	46	66,700	12'-0"	44	
1450	9	13,050	12'-0"	64	
960	11	10,560	12'-0"	62	
840	9	7,560	10'-0"	40	Occupancy 23 sq.ft./person
720	10	7,200	12'-0"	24	
600	18	10,800	10'-0"	20	Occupancy 23 sq.ft./person
480	9	4,320	10'-0"	16	Dark Room
TOTAL	112	120,190			
TOTAL GROUP 7-19		120,190			

Group 7-19 **BUILDINGS**

2	@	10,800 sq. ft.	21,600 sq. ft.
2	@	14,400 sq. ft.	28,800 sq. ft.
5	@	18,000 sq. ft.	90,000 sq. ft.
		TOTAL	140,400 sq. ft.

Note: Difference between total building area and Total Group 7-19 floor area is miscellaneous space (group 7-26)

140,400 sq. ft.
120,190 sq. ft.

20,210 sq. ft.

Group 7-20 Industrial Arts (shop area) Design Occupancy - 25 sq. ft. per person

Exterior Spaces

Size (sq. ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)
2400	12	28,800	12'-0"	104

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)
2080	6	12,480	12'-0"	56
1800	25	45,000	12'-0"	60
1600	20	32,000	12'-0"	40
1427	20	28,540	12'-0"	80
345	9	3,110	10'-0"	16
TOTAL	92	149,930		
TOTAL GROUP 7-20		149,930		

Group 7-20 BUILDINGS

6	@	7,200 sq. ft.	43,200 sq. ft.
3	@	10,800 sq. ft.	32,400 sq. ft.
5	@	14,400 sq. ft.	72,000 sq. ft.
2	@	18,000 sq. ft.	36,000 sq. ft.
		TOTAL	183,600 sq. ft.

Note: Difference between total building area and Total Group 7-20 floor area is miscellaneous space (Group 7-26).	183,600 sq. ft. 149,930 sq. ft. 33,670 sq. ft.

Group 7-21 Physical Education (activity)

Exterior Spaces (treat as interior)

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Design Occupancy (sq.ft./person)
12,000	3	36,000	28'-0"	9 seated (game) 7 assembly
10,200	5	51,000	28'-0"	9 seated (game) 7 assembly
9,000	2	18,000	28'-0"	9 seated (game) 7 assembly

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Design Occupancy (sq.ft./person)
6,000	1	6,000	28'-0"	9 seated (game) 7 assembly
5,000	2	10,000	28'-0"	9
3,500	2	7,000	28'-0"	9
2,000	10	20,000	28'-0"	9
TOTAL	25	148,000		
TOTAL GROUP 7-21		148,000		

Group 7-21 BUILDINGS

9	@	10,800 sq. ft.	97,200 sq. ft.
2	@	14,400 sq. ft.	28,800 sq. ft.
2	@	18,000 sq. ft.	36,000 sq. ft.
		TOTAL	162,000 sq. ft.

Note: Difference between total building area and Total Group 7-21 floor area is miscellaneous space (group 7-26)	162,000 sq. ft. 148,000 sq. ft. 14,000 sq. ft.

Group 7-22 Physical Education (locker and changing areas)

Exterior Spaces (treat as interior)

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Design Occupency (persons)
6000	18	108,000	12'-0"	160
TOTAL	18	108,000		
TOTAL GROUP 7-22		108,000		

Group 7-22 BUILDINGS

6	@	7,200 sq. ft.	43,200 sq. ft.

BUILDINGS (continued)

5	@	10,800 sq. ft.	54,000 sq. ft.
2	@	14,400 sq. ft.	28,800 sq. ft.
		TOTAL	126,000 sq. ft.

Note: Difference between total building area and Total Group 7-22 floor area is miscellaneous space (Group 7-26.)	126,000 sq. ft. 108,000 sq. ft. 18,000 sq. ft.

Group 7-23 Music

Exterior Spaces

Size (sq.ft.)	No. of Spaces	Total Area (sq. ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)	Design Occupancy (persons)
2100	18	37,800	14'-0"	60	100
640	16	10,240	10'-0"	20	28
500	10	5,000	10'-0"	15	22
TOTAL	44	53,040			

Interior Spaces (no perimeter wall)

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Design Occupancy (persons)
260	9	2,340	10'-0"	11
TOTAL	9	2,340		
TOTAL GROUP 7-23		55,380		

Group 7-23 **BUILDINGS**

3	@	7,200 sq. ft.	21,600 sq. ft.
1	@	10,800 sq. ft.	10,800 sq. ft.
2	@	18,000 sq. ft.	36,000 sq. ft.
		TOTAL	68,400 sq. ft.

Note: Difference between total building area and Total Group 7-23 floor area is miscellaneous space (Group 7-26).	68,400 sq. ft. 55,040 sq. ft. 13,360 sq. ft.

Group 7-24 Multi-Use Hall

Design Occupancy - 15 sq. ft. per person

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)	Notes
3300	9	30,700	14'-0"	50	
1880	9	16,920	12'-0"	40	
1460	10	14,600	12'-0"	30	
880	12	10,560	10'-0"	25	Design occupency 36 persons
TOTAL	40	72,780			
TOTAL GROUP 7-24		72,780			

Group 7-24 BUILDINGS

1	@	7,200 sq. ft.	7,200 sq. ft.
4	@	10,800 sq. ft.	43,200 sq. ft.
2	@	18,000 sq. ft.	36,000 sq. ft.
		TOTAL	86,400 sq. ft.

Note: Difference between total building area and Total Group 7-24 floor area is miscellaneous space (Group 7-26)	86,400 sq. ft. 72,780 sq. ft. 13,620 sq. ft.

Group 7-25 Food Service (kitchen type space)

Exterior Spaces

Size (sq.ft.)	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)	Perimeter Wall (each space) (linear ft.)	Design Occupancy (persons)
2240	9	20,160	12'-0"	40	6
TOTAL GROUP 7-25		20,160			

Group 7-25 **BUILDINGS**

4 @ 7,200 sq. ft.		28,800 sq. ft.
	TOTAL	28,800 sq. ft.

Note: Difference between total building area and Total Group 7-25 floor area is miscellaneous space (Group 7-26)	28,800 sq. ft. 20,160 sq. ft. 8,640 sq. ft.

Group 7-26 Miscellaneous Space

	No. of Spaces	Total Area (sq.ft.)	Ceiling Height (ft.)
Toilets	230	37,300	10'-0"
Miscellaneous		155,410	
TOTAL GROUP 7-26		192,710	

Spaces within this group occur in buildings in all other groups.

N. Summary of Quantity Estimates

Spaces Type	Area	Buildings (Area) Area
7-17	464,960	529,200
7-18	67,890	75,600
7-19	120,190	140,400
7-20	149,930	183,600
7-21	148,000	162,000
7-22	108,000	126,000
7-23	55,380	68,400
7-24	72,780	86,400
7-25	20,160	28,800
7-26	192,710	
	1,400,000 sq. ft.	1,400,400 sq. ft.

Building (sizes) Building Size (sq.ft.)	No. of Buildings	Total Area (sq.ft.)
7,200 sq. ft.	32	230,400
10,800 sq. ft.	30	324,000
14,400 sq. ft.	15	216,000
14,400 sq. ft. (2 storey)	4	57,600
18,000 sq. ft.	14	252,000
21,600 sq. ft.	2	43,200
25,200 sq. ft.	1	25,200
36,000 sq. ft.	7	252,000
TOTAL	105	1,400,400

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

BIDDING SHEETS: LUMP SUM

CATEGORY 7 - HEATING, VENTILATING AND COOLING

In response to the Commission's Invitation to Bid, dated July 18, 1963, the undersigned hereby proposes and agrees to furnish any and all labor, materials, equipment, transportation, and services for the development, testing, supply, and erection of the building components as called for in the Commission's Performance Specifications, Category 7, Heating, Ventilating and Cooling, for a total Enclosed Area of 1,400,000 square feet, with space types in the areas listed below. The undersigned acknowledges that this square footage is an area used as a base for bidding, that the actual Project Computed Area will be between 1,400,000 and 2,400,000 square feet, and that unit prices derived from this bid are applicable within the above stated range.

The undersigned further agrees to (a) furnish to the Commission by December 1, 1963 an itemized breakdown of all component parts of the Heating, Ventilating and Cooling systems of this contract for approval, (b) furnish by July 1, 1964 unit prices for each of these component parts, and (c) furnish by September 1, 1964 detailed drawings indicating the size, physical characteristics and rating where applicable of each of these component parts.

It is understood that the Heating, Ventilating and Cooling components covered by this Proposal must be compatible with at least one system for Structure and one for Lighting-Ceiling. The Heating, Ventilating and Cooling systems of this Proposal are compatible with the component systems of the bidders listed here:

Structure:

____

____

____

____

Lighting-Ceiling:

____

____

____

____

The undersigned further agrees that his company name may be listed on the bidding sheets of all bidders named above. It is understood that the Commission will consider component systems to be compatible only when the names of bidders are mutually listed.

It is further understood (a) that bids will be awarded only on a composite basis which includes the three component categories: Structure; Heating, Ventilating and Cooling; and Lighting-Ceiling, and that the bid price to be considered by the Commission will be the sum of the three lump figures from three compatible component categories, and (b) that if a manufacturer submits bids to cover two or three of the component categories, he shall submit a separate price for each category on the bidding sheets for that category.

For all work called for in the Performance Specifications, Category 7, Heating, Ventilating and Cooling, for:

1. The following sub-systems in the quantities shown:

SPACE TYPE	SQ. FT. SERVED	MSM	CONTROL ZONES	NATURE OF SUB-SYSTEM
7-17	464,960	129	260	H V & C
7-18	67,890	19	60	H V & C
7-19	120,190	33	56	H V & C
7-20	149,930	42	40	H & V
7-21	148,000	41	25	H & V
7-22	108,000	30	18	H & V
7-23	55,380	15	25	H V & C
7-24	72,780	20	25	H V & C
7-25	20,160	6	9	H & V
7-26	192,710	53	(230 toilets)	H & V

TOTAL ENCLOSED
AREA 1,400,000

THE SUM OF ____

______________________________ DOLLARS ($______________________)

2. The following sub-systems in the quantities as shown above:

A for H V & C sub-system space type 7-17 $ ____________________

B for H & V sub-system space type 7-17 $ ____________________

C for H V & C sub-system space type 7-18 $ ____________________

D for H & V sub-system space type 7-18 $ ____________________

E for H V & C sub-system space type 7-19 $ ____________________

F for H & V sub-system space type 7-19 $ ____________________

G for H V & C sub-system space type 7-20 $ ____________________

H for H & V sub-system space type 7-20 $ ____________________

I for H V & C sub-system space type 7-21 $ ____________________

J for H & V sub-system space type 7-21 $ ____________________

K for H V & C sub-system space type 7-22 $ ____________________

L for H & V sub-system space type 7-22 $ ____________________

M for H V & C sub-system space type 7-23 $ ____________________

N for H & V sub-system space type 7-23 $ ____________________

O for H V & C sub-system space type 7-24 $ ____________________

P for H & V sub-system space type 7-24 $ ____________________

Q for H & V sub-system space type 7-25 $ ____________________

R for H & V sub-system space type 7-26 $ ____________________

____
(Name and quality of bidder)

By ____
(Title of corporate officer or
other individual executing proposal)

Dated ____________________, 1963

at ______________________________

Bidder's address

____

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July, 1963
Bid Copy

PART 7 - PERFORMANCE SPECIFICATIONS

CATEGORY 8 - LIGHTING-CEILING

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FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

PERFORMANCE SPECIFICATIONS

CATEGORY 8 - LIGHTING-CEILING

8-1 INTRODUCTION

To provide appropriate lighting, ceiling, and acoustical components for the various space types within the Project schools, these specifications establish several basic Lighting-Ceiling Assemblies. The term Assembly defines the total aggregate ceiling construction from wall to wall and includes all lighting, acoustical, and ceiling members.

Within the Project schools, District Architects will use the components of each Assembly in varying quantities and combinations, and in rooms with a variety of physical characteristics. To establish a basis for testing, however, specific Design Conditions define rooms of certain dimensions, light reflectance values, and construction characteristics, and approximate the typical spaces in which the Lighting-Ceiling Assembly will be used. Each Lighting-Ceiling Assembly shall conform to the performance specifications under the Design Conditions set forth for it.

8-2 COORDINATION

During the Project development stage the lighting and ceiling components shall be carefully and completely integrated with the structural and mechanical elements, and shall be coordinated with the interior partitions.

SCSD will act as a central coordinating agency to assure workable details, connections, clearances, and tolerances.

8-3 CONTRACT DOCUMENTS

Parts 1 through 6 of the Contract are a part of this section of the specifications, and the work done within this Contract shall be coordinated with Categories 6, 7, and 9 of the Performance Specifications, Part 7.

8-4 SCOPE

This Component Contractor shall furnish and install all materials and equipment and provide all labor required and necessary to complete the work and obtain the performance specified herein. Included is research, development and testing, supply of components and equipment, installation, and supervision.

8-5 GOVERNING REGULATIONS

All work and materials shall be in full accordance with current requirements of the following codes and standards:

A. The California State Fire Marshal, Title 19. California Administrative Code.*

B. The Division of Architecture, Title 21. California Administrative Code.*

C. The Uniform Building Code, 1961 Edition.

D. Electrical Safety Orders, Department of Industrial Relations, State of California.

E. The National Electric Code.

F. National Board of Fire Underwriters - Underwriters Laboratories, Inc.

G. Applicable mechanical codes and standards where lighting-ceiling components perform mechanical functions. Refer to Heating, Ventilating and Cooling, Category 7.

*Note: In cases of conflict between codes, Title 19 and Title 21 shall take precedence.

This Component Contractor shall arrange for and pay for all inspections and tests to assure compliance with the above codes and standards, and shall furnish copies of compliance certifications for each component to SCSD and to the applicable state agencies as required.

8-6 WORK INCLUDED

A. Luminaires, fixtures, and/or lighting channels, complete.
B. Wiring from junction boxes to fixtures.
C. Mounting devices, brackets, escutcheons, stems and trim.
D. Ballasts and ballast wiring.
E. Lamps.
F. Lenses, diffusers, louver, and/or other light control elements.
G. Radio interference filters.
H. Acoustical tile, panels, or other sound control material.
I. Ceiling suspension members.
J. Hangers or other attachments.
K. Edge trim, clips and spacers.
L. Closure panels above ceiling at partitions (demountable, fixed and operable).
M. Any mechanical diffusers or return air devices which may be integral with luminaires, suspension systems, tile, or other lighting-ceiling components.

8-7 WORK NOT INCLUDED

A. Exterior lighting.
B. Special effect lighting.
C. Distribution wiring.
D. Switchboards and panelboards.
E. Junction boxes.
F. Switches.
G. Convenience outlets.

8-8 PERFORMANCE TESTING

Specific performance specifications are given for each Assembly. This Component Contractor shall arrange for and pay for all inspections and tests necessary to assure compliance with these requirements. The testing shall be done by an independent testing organization approved by SCSD, and copies of the test results shall be made available to SCSD and the applicable state agencies as required. Satisfactory interim test results from the Phase One mock-up building program shall be completed by September 1, 1964. Verification by final testing in the Phase Two mock-up building, and testing done in independent laboratories shall be completed by March 1, 1965. All systems in the Phase Two mock-up shall be operative by September 1, 1964.

A. Photometric measurements shall be performed in accordance with the latest recommendations of the I.E.S.

B. Testing shall be done in rooms without furniture or equipment.

C. Natural light shall not be considered in fixture design, illumination calculations, or performance testing.

D. All illumination shall be by standard cool white fluorescent lamps.

E. All measurements shall be made with lamps having a lumen output equal to or exceeding the manufacturer's rating for that particular lamp type.

F. All measurements shall be made with lamps which have been in use at least 200 hours.

G. Lighting components shall be designed for 277 volt operation.

H. Work plane shall be 30" above finished floor.

I. The nominal ceiling plane shall be considered a horizontal plane at the height of the interior partitions (10'-0" for the Academic and Corridor Assemblies outlined in this specification).

J. Sound measurements shall be accomplished by the procedures outlined in Appendix 2.

8-9 DETAILS AND UNIT PRICES

A. This Component Contractor shall keep SCSD informed as to the quantity and character of the various components during the development period, and shall furnish, by December 1, 1963, an itemized breakdown of the component parts of the Lighting-Ceiling systems, for approval by SCSD. This breakdown shall include the quantity of each component required within each Assembly.

B. After the development period but before July 1, 1964, this Component Contractor shall furnish to SCSD the following information related to the original lump sum bid for the specified building areas:

1. The installed unit price of each component.
2. The total installed cost of each Assembly.
3. The installed unit price of each Accessory Item.
4. The total installed cost of each Accessory Item in the quantities specified.

The sum of the total installed costs of all Assemblies plus the total installed cost of the Accessory Items shall agree exactly with the original lump sum bid of this Component Contractor. Refer to Part 1 Information to Bidders, Bidding Procedures.

C. This Component Contractor shall also furnish to SCSD by September 1, 1964 the following information:

1. The exact size and physical characteristics of each component in the form of detailed drawings.

2. Assembly drawings showing the various connections and junctions of the Lighting-Ceiling components.

3. Complete lighting engineering data in accordance with the IES General Guide to Photometry for each Assembly:

    a. Application engineering data.
    b. Candlepower distribution data.
    c. Brightness data.
    d. Polarization data where applicable.

8-10 ACADEMIC AREAS

The areas to be served by the Lighting-Ceiling Assemblies specified in this section consist of basic administration and academic spaces (i.e., classrooms, laboratories, libraries, and in some cases shops).

Flexibility of the academic spaces through the use of operable and demountable partitions is a basic concept of the Project and the ability to rearrange Lighting-Ceiling components within the 5'-0" x 5'-0" structural module shall be a major design requirement. The rearrangement characteristics shall be such that the mechanical and electrical service requirements may be accommodated.

A. Design Conditions

The following Design Conditions define a room of specific physical characteristics, within which all academic Lighting-Ceiling Assemblies shall perform as specified.

1. Room Dimensions:
    - Width: 32'-0" (to centerline of walls)
    - Length: 28'-0" (to centerline of walls)
    - Ceiling Height: 10'-0" (to nominal ceiling plane)

2. Reflectance Values:
    - Walls: 50%
    - Floors: 30%

3. Structural Module: 5'-0" x 5'-0"

4. Wall Construction:
   Demountable partitions on one long side and two short sides, exterior walls on one long side. No windows in any walls.

5. Square footage for bidding purposes: 896 sq. ft.

6. The relationship of the room to the structural module shall be as shown in Diagram A, Appendix 3. All academic Assemblies shall include a horizontal plane of ceiling material, free of lighting elements, on three sides of the room to receive the demountable partitions.

B. General Design Requirements

All academic Assemblies shall conform to the following design requirements under the Design Conditions, Section 8-10A.

1. Average illumination at the work plane shall be at least 70 footcandles maintained.

2. Illumination at the work plane at any point more than 4'-0" from walls shall be within 25% of the average illumination level.

3. Maximum brightness of any area within the room in the 45° to 85° (from nadir) zone shall not be more than 350 footlamberts.

4. Maximum brightness of any area within the room in the 0° to 45° (from nadir) zone shall not be more than 500 footlamberts.

5. Minimum brightness of any area within the room not more than 12" in least dimension shall not be less than 10 footlamberts when measured at any angle.

6. Minimum brightness of any area within the room more than 12" in least dimension shall not be less than 16 footlamberts when measured at any angle.

7. Brightness measurements shall be made using a Spectra Spot Brightness Meter with a 1-1/2 degree field. Measurements shall be made from points 48" off the floor, and shall include all surfaces within the room.

8. Ballasts shall be CBM certified as meeting or exceeding ASA specification C82, and shall be completely concealed.

9. Ballast shall have the quietest sound rating available at time of installation for the particular type of lamp being utilized.

10. The light control elements shall not show a yellowness increase of more than 15 IES-NEMA-SPI units after 500 hours of exposure in an Atlas FDAR Fadeometer in accordance with ASTM D822-57T and E42-56T.

11. Light control elements shall have no deformations or patterns unless necessary for rigidity or proper light diffusion.

12. All exposed metal surfaces shall be white, with the exact shade to be approved by SCSD. A standard color chip will be retained by SCSD, and all components shall show less than 1 NBS unit deviation from this standard at delivery. Measurements shall be made in accordance with ASTM D1495-57T, D1482-57T, D1365-55T or D1260-55T.

13. All painted surfaces shall be hot zinc phosphated and finished with baked-on white enamel with a minimum thickness of 1.2 mils. The finish shall show no blistering after 500 hours water immersion in accordance with ASTM D870-54. All hardware shall be cadmium plated.

14. Lighting dimensions and configurations shall be coordinated with and acknowledge the 5'-0" x 5'-0" structural module.

15. Attachments shall be concealed and shall be of such design as to allow lighting elements to be relocated readily.

16. The lighting systems shall be so arranged that an interior column will not necessitate the omission of lighting capability in more than one 5'-0" x 5'-0" module. If a compatible structural system features columns located at the intersection of the 5'-0" module lines, adjacent Lighting-Ceiling elements may require a special configuration.

17. Assemblies shall include a ceiling throughout, except that exposed structural members will be acceptable, provided they present a finished, fire resistive surface, are coordinated with the lighting components, and meet the illumination and acoustical requirements of this specification.

18. The ceiling or exposed structural system may assume shapes or forms other than a horizontal plane, providing that horizontal ceiling elements are available within the system to receive partitions.

19. To receive partitions within their vertical adjustment capability, the horizontal elements of the ceiling system shall, under dead load conditions, be level within 1/2"± and shall not vary more than 1/2" in 20'-0".

20. Ceiling dimensions and configurations shall be coordinated with and acknowledge the 5'-0" x 5'-0" structural module. The structural system will provide the capability for attachment of lighting and ceiling elements at 5'-0" on center in both directions.

21. The ceiling system shall not require modifications to the building structure other than the addition of attachments, and shall be so designed that the removal of the ceiling system does not appreciably mar or disfigure the structural elements.

22. The ceiling system shall have the capability to receive and provide the necessary stability for interior partitions which may be located on any increment of the partition planning module (4" x 4"). Partition attachments shall be possible at points not more than 5'-0" apart in either direction. The ceiling system shall adequately resist the maximum thrust imposed by eccentrically loaded partitions. Refer to Interior Partitions, Category 9.

23. The ceiling system shall be designed to allow electrical service to be routed from the space above the ceiling directly into fixed and demountable partitions.

24. Ceiling suspension members or other visible linear elements within the ceiling system shall be no wider than 4" and shall be coordinated with the 4" x 4" planning module.

25. Except where structural members form the ceiling, the ceiling system shall be designed so that access to the space above can be accomplished without damage or alteration to any component.

26. The ceiling system shall acknowledge the requirements imposed by the mechanical system and allow for any necessary devices. Individual grilles or registers will be by the Heating, Ventilating and Cooling Component Contractor; but if items such as linear diffusers in the ceiling grid or perforated tile are required for mechanical purposes, these shall be furnished by this Lighting-Ceiling Component Contractor and coordinated with the Heating, Ventilating and Cooling Component Contractor.

27. If the Lighting-Ceiling components perform mechanical functions (i.e., serving as plenums, ducts or portions of ducts, or diffusers), this Lighting-Ceiling Component Contractor shall be responsible for the necessary sealing and balancing of the air supply. The capability of removing and/or utilizing lamp and ballast heat is a desirable feature.

28. The ceiling system shall include any closure panels or baffles above the ceiling necessary to prevent light leakage from one room to another or to meet the sound attenuation requirements. Closure panels or baffles above demountable partitions shall be readily movable, and shall be on the same order of flexibility as the demountable partitions themselves.

29. Ceiling reflectance values for non-luminous elements shall be not less than 80%. If building elements other than Lighting-Ceiling components serve as reflecting surfaces or finished ceiling surfaces (i.e., exposed structure), this Component Contractor shall be responsible for painting or other finishing necessary to bring the reflectance values up to the 80% minimum.

30. The ceiling system shall be so designed that in certain areas ceilings may be suspended or attached one or two vertical modules (12" or 24") lower than the normal ceiling plane for purposes of furring.

31. Termination of the ceiling at fixed interior walls, shear walls, exterior walls, ceiling expansion joints, changes in ceiling level, or other similar conditions, shall be accomplished with closures or trim visually and structurally compatible with the overall ceiling system.

32. Ceiling panels shall not show an appreciable loss of acoustical properties when painted with non-bridging paint in accordance with accepted practice. Panels, when cleaned in accordance with the manufacturer's recommended practice, shall not lose more than 5% of their light reflectance value.

33. The ceiling system shall provide space and clearances for concealed circuit wiring and conduit runs in both directions, and shall be designed so that electrical service to the lighting elements is inconspicuous. Long or unsightly runs will not be allowed.

34. The ceiling system may serve as structural fireproofing, providing the acoustical and illumination requirements are met, and subject to the requirements of the structural specifications. In this case the ceiling-structural assembly shall be rated for one hour when tested in accordance with procedures established by ASTM E 119-61. Testing shall be done by an agency approved by SCSD. Refer to Structural specifications, Category 6, paragraph 6-8.

35. Ceiling panels shall have a class I flame spread index when tested in accordance with ASTM E84-61, and shall have a class A flame resistance rating when tested in accordance with Federal Specifications SS-A-00118c.

36. Light control elements shall have a class I flame spread index, except that where the area of exposed surface of the control elements does not exceed twenty square feet in any one hundred square feet of ceiling area, Class III materials may be used.*

37. The room to room sound attenuation shall be measured in accordance with the procedures outlined in Appendix 2. The minimum Noise Reduction Factor for the various octave bands shall be as follows:

75 - 150 cps	18 decibels
150 - 300 cps	23 decibels
300 - 600 cps	28 decibels
600 - 1200 cps	31 decibels
1200 - 2400 cps	31 decibels
2400 - 4800 cps	34 decibels
Average	28 decibels

38. Each basic academic Lighting-Ceiling Assembly, including light control elements, ceiling panels, suspension grids and/or exposed structure, shall have available two levels of sound absorption. Refer to Appendix 2 for testing procedures.

    a. Academic Lighting-Ceiling Assemblies A1, B1 and C1 shall contribute (within the Design Conditions, Section 8-10A) a minimum absorption of 250 sabines at 500 cycles per second. If such absorption is not inherent within the ceiling tiles or panels, this Component Contractor shall furnish and install supplementary

*From revised Title 19, available shortly.

acoustical components to bring the coefficient to the required level. These supplementary components shall be visually and dimensionally coordinated with the total Lighting-Ceiling Assembly. No portion of these supplements shall extend below the ceiling plane.

b. Academic Lighting-Ceiling Assemblies A2, B2, and C2 shall contribute (within the Design Conditions, Section 8-10A) a minimum absorption of 110 sabines at 500 cycles per second.

8-11 ASSEMBLY A1 - ACADEMIC

Within the Design Conditions, Section 8-10A, this Assembly shall conform to the General Design Requirements, Section 8-10B as well as to the following specific design requirements:

1. Illumination shall be by semi-indirect luminaires.
2. Bottoms of luminaires shall not be more than 8" below the nominal plane of the ceiling.
3. Maintenance factor for illumination calculations shall be .70.
4. Acoustical properties of this Assembly shall be as specified in Section 8-10B, paragraph 38a.

8-12 ASSEMBLY A2 - ACADEMIC

The requirements for this Assembly shall be the same as those for Assembly A1 - Academic, except that the acoustical properties shall be as specified in Section 8-10B, paragraph 38b.

8-13 ASSEMBLY B1 - ACADEMIC

Within the Design Conditions, Section 8-10A, this Assembly shall conform to the General Design Requirements, Section 8-10B, as well as to the following specific design requirements:

1. Illumination shall be by a horizontal luminous plane, or shall have the appearance of such a plane.
2. Light control elements shall cover the 5 module by 6 module central ceiling area within the test room described in Section 8-10A. Mechanical grilles or diffusers may interrupt this area.
3. Suspension grids, frames, exposed (finished) structural members, or other opaque dividers between light control elements shall be no wider than 4", and shall be capable of receiving partitions.

4. Light control elements shall be interchangeable with ceiling panels without requiring alteration or deformation of the ceiling support system, and these panels shall be capable of receiving partitions.

5. Lighting elements shall respect the 5'-0" x 5'-0" structural module, and shall be located to allow for simple rearrangement of circuitry when partitions are moved.

6. Maintenance factor for illumination calculations shall be .65.

7. Acoustical properties of this Assembly shall be as specified in Section 8-10B, paragraph 38A.

8-14 ASSEMBLY B2 - ACADEMIC

The requirements for this Assembly shall be the same as those for Assembly B1 - Academic, except that the acoustical properties shall be as specified in Section 8-10B, paragraph 38b.

8-15 ASSEMBLY C1 - ACADEMIC

Within the Design Conditions, Section 8-10A, this Assembly shall conform to the General Design Requirements, Section 8-10B, as well as to the following specific design requirements.

1. Illumination shall be by a direct lighting system.

2. Maintenance factor for illumination calculations shall be .65.

3. Luminaires shall be interchangeable with ceiling panels without requiring alteration or deformation of the ceiling support systems, and these panels shall be capable of receiving partitions.

4. Light control elements may be dropped below the nominal ceiling plane a maximum of 4", subject to mechanical air distribution limitations.

5. Acoustical properties of this Assembly shall be as specified in Section 8-10B, paragraph 38a.

8-16 ASSEMBLY C2 - ACADEMIC

The requirements for this Assembly shall be the same as those for Assembly C1 - Academic, except that the acoustical properties shall be as specified in Section 8-10B, paragraph 38b.

8-17 ASSEMBLY D - CORRIDOR

The areas to be served by the Lighting-Ceiling Assembly specified in this section consist of corridors, locker areas and similar spaces.

Flexibility and rearrangement characteristics of the corridor Lighting-Ceiling components shall be the same as those of the academic Assemblies, as the two space types may be interchangeable by rearrangement of demountable partitions.

A. Design Conditions

The following Design Conditions define a room of specific physical characteristics, within which the corridor Assembly shall perform as specified.

1. Room Dimensions:

   Width: 10'-0" (to center line of wall)
   Length: 28'-0" (to center line of wall)
   Height: 10'-0" (to nominal ceiling plane)

2. Reflectance Values:

   Walls: 50%
   Floors: 30%

3. Structural Module:

   5'-0" x 5'-0"

4. Wall Construction:

   Demountable partitions on 4 sides.

5. Square footage for bidding purposes:

   280 sq. ft.

6. The relationship of the room to the structural module shall be as shown in Diagram B, Appendix 3.

B. Design Requirements

This Assembly shall conform to the following design requirements under the specific Design Conditions, Section 8-17A.

1. Illumination shall be by a direct or semi-direct lighting system.

2. Average illumination at the work plane shall be a minimum of 20 footcandles maintained.

3. Illumination at the work plane at any point shall be within 50% of the average illumination level.

4. Lamps shall not be visible at any angle between 45° and 85° from nadir.

5. Maintenance factor for illumination calculations shall be .65.

6. The Assembly shall include a horizontal ceiling throughout, identical to that specified for the academic Assemblies.

7. The Assembly shall meet the requirements of Section 8-10B, paragraphs 8 through 15 and 19 through 37.

8. The average Noise Reduction Coefficient (NRC) of the total Lighting-Ceiling Assembly shall be not less than .30.

9. Light control elements shall have a Class I flame spread index.

8-18 ASSEMBLY E - GYMNASIUM

The area to be served by the Lighting-Ceiling Assembly specified in this section consists of gymnasium and physical education activity space.

A. Design Conditions

The following Design Conditions define a room of specific physical characteristics, within which the gymnasium Assembly shall perform as specified.

1. Room Dimensions:

Width:	110'-0"	(to center line of walls)
Length:	120'-0"	(to center line of walls)
Height:	25'-0"	(to bottom of structure)

2. Reflectance Values:

Ceiling:	70%
Walls:	40%
Floors:	30%

3. Structural Module:

   5'-0" x 5'-0"

4. Wall Construction:

   Permanent walls on 4 sides

5. Square footage for bidding purposes:

   13,200 sq. ft.

6. The relationship of the room to the structural module shall be as shown in Diagram C, Appendix 3.

B. Design Requirements

This Assembly shall conform to the following design requirements under the specific Design Conditions, Section 8-18A.

1. Luminaires shall be so designed or arranged in such combinations that two maintained levels of illumination at the work plane, 50 footcandles or 15 footcandles, may be obtained by selective switching.
2. Illumination at the work plane at any point shall be within 35% of the average illumination level.
3. Maintenance factor for illumination calculations shall be .70.
4. Luminaire dimensions and configurations shall be coordinated with and acknowledge the structural module.
5. Luminaires shall be designed to attach directly to the structure with the luminaire bottom no lower than 12" below the bottom of the structural elements.
6. Luminaires shall have an upward component of between 15% and 20%.
7. Luminaires shall be adequately protected from damage due to normal gymnasium activities.
8. Although an applied ceiling is not required in this area, the underside of the deck or ceiling shall have a minimum average Noise Reduction Coefficient (NRC) of .26. If such a coefficient is not inherent within the basic structural system, this Component Contractor shall furnish and install supplementary acoustical components to bring the absorption coefficient to the required level. These supplementary components shall be visually and dimensionally coordinated with the total structural arrangement.

8-19 ACCESSORY ITEMS

To provide adequate flexibility in the use of the various Lighting-Ceiling Assemblies, Accessory Items for special conditions are specified in this section.

A. Ceiling Openings

Ceiling openings shall be possible, to allow for the intersection of pipes, etc., with the ceiling. These openings shall be provided with trim compatible with the overall ceiling system. Two ranges of openings shall be provided:

1. Small Openings with a maximum area of 150 sq. in.

2. Large Openings with longest dimension 5'-0" or less.

Openings larger than the above shall be treated in the same manner as the termination of the ceiling at an exterior wall, and the unit prices derived from the Design Conditions, Section 8-10A, for this condition shall apply.

This section does not include openings for columns or mechanical devices which are part of the integrated structural-mechanical-lighting sandwich. The cost of these shall be born by the Component Contractor requiring the openings.

B. High Humidity Ceiling Panels

Ceiling panels for high humidity areas such as gymnasium locker rooms or kitchens shall conform to the specifications for standard ceiling panels, except that:

1. Panels shall be impervious to moisture under the conditions normally encountered in school locker rooms or kitchens.

2. Panels shall be completely washable.

3. Reflectance value shall be a minimum of 70%.

4. Noise Reduction Coefficient (NRC) shall be a minimum of .70.

C. Furred Ceiling Return

Vertical returns at the termination of furred ceiling areas (refer to Section 8-10B, paragraph 30) shall meet the following requirements:

1. Ceiling returns shall be of the same material and of the same color as the standard ceiling panels of the Academic Assemblies.

2. Ceiling returns for two furring dimensions shall be available: 1 module (12") and 2 modules (24") below the nominal ceiling plane.

3. Ceiling returns shall be accomplished with closures and trim visually, structurally, and dimensionally compatible with the overall ceiling system.

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

APPENDIX 1
BIDDING INSTRUCTIONS

CATEGORY 8 - LIGHTING-CEILING

A. Refer to Part 1, Information to Bidders for general information on Project bidding procedures, coordination of component categories before bidding, evaluation submission, etc.

B. In the Bidding Sheets, the total 1,400,000 square feet Enclosed Area is broken down into exact areas to be served by each of the specified Assemblies. This breakdown is an approximation of the percentages of use of each Assembly based on studies of past schools in the various Districts and the desires of the District Architects, and is an estimate for bidding purposes only. The exact proportion of use of the alternate Assemblies or components will be a matter of choice of the District Architects and their engineers, and will be influenced by tne unit price, efficiency, and design characteristics of each component.

C. Design Conditions for each Assembly are given in the specifications. These Design Conditions define rooms of specific size and physical characteristics within which an Assembly must perform as specified. For bidding purposes, the entire area served by each Assembly (see Bidding Sheets) shall be considered to be composed of spaces identical to the Design Conditions for that Assembly.

D. The installed cost per square foot of an Assembly within these Design Conditions shall, for bidding purposes, be valid for the entire area served by that particular Assembly, and shall include all work as specified in Section 8-6. In computing the installed cost of Assemblies A, B, C, and D, items which occur on the centerline of interior partitions (i.e., closures above the ceiling, ceiling suspension members, etc.) shall be counted at 50%.

E. The total lump sum bid shall be the sum of the installed cost of the Assemblies and the Accessory Items in the quantities listed in the Bidding Sheets. Bids for a portion of the work will not be considered.

F. Unit prices for the various Assemblies are not required at bidding time. This allows the successful bidder to reapportion or adjust unit costs within the total lump sum bid as development progresses and details are refined.

G. It will be acceptable for two or more manufacturers to coordinate their products and submit a joint bid for the total work. Evaluation submissions for a portion of the work will be accepted, however, coordination before evaluation is strongly recommended.

H. The Lighting-Ceiling system must be completely compatible with the systems for Heating, Ventilating, and Cooling, and Structure which are inserted on the Bidding Sheets. If certain of these systems dictates special requirements (i.e., a structural system with deflection in excess of that indicated, or a partition system which exerts upward pressure on the ceiling, etc.) the Lighting-Ceiling system must be able to comply in order to be considered compatible.

I. Contracts will be awarded only on a composite basis which includes the three component categories: Structure; Heating, Ventilating and Cooling; and Lighting-Ceiling. The total bid price which will be considered by the Commission will be the sum of three lump sum figures from three compatible component categories.

APPENDIX 2
ACOUSTICAL MEASUREMENTS

CATEGORY 8 - LIGHTING-CEILING

A. Ceiling Sound Attenuation - Academic Assemblies

Room to room sound attenuation measurements shall be made under actual field conditions within a room conforming to the Design Conditions, Section 8-10A. This room shall be the receiving room and will have, for testing purposes, a total effective absorption of 580 sabines at 500 cps. The long wall shall be used for attenuation measurements.

Measurements shall be made by the procedures outlined in the Provisional Code for Measurements of Sound Insulation, 1948 symposium of the Acoustic Group of the Physical Society, London. This code, in general, states the following: The airborne sound shall be generated by loudspeakers in the transmitting room. White noise shall be used. The loudspeaker shall be placed to give as diffuse and isotropic a sound field as possible.

Measurements shall be carried out in the following octave bands: 75-150 cps, 150-300 cps, 300-600 cps, 600-1200 cps, 1200-2400 cps, and 2400-4800 cps.

The Noise Reduction Factor for each octave band shall be below the minimum given in Section 8-10B, paragraph 37. A single average figure shall not be given.

The room to room sound attenuation requirements for academic Lighting-Ceiling Assemblies are the same as the room to room attenuation requirements for the Interior Partitions, Category 9.

The specified attenuation may be accomplished by the ceiling material alone or by the ceiling plus supplementary closures in the plenum above. Refer to Section 8-10B, paragraph 28.

B. Ceiling Sound Absorption - All Assemblies

Sound absorption measurements of Lighting-Ceiling Assembly components shall be in accordance with ASTM C423-60T, and shall be made by one of the following testing laboratories:

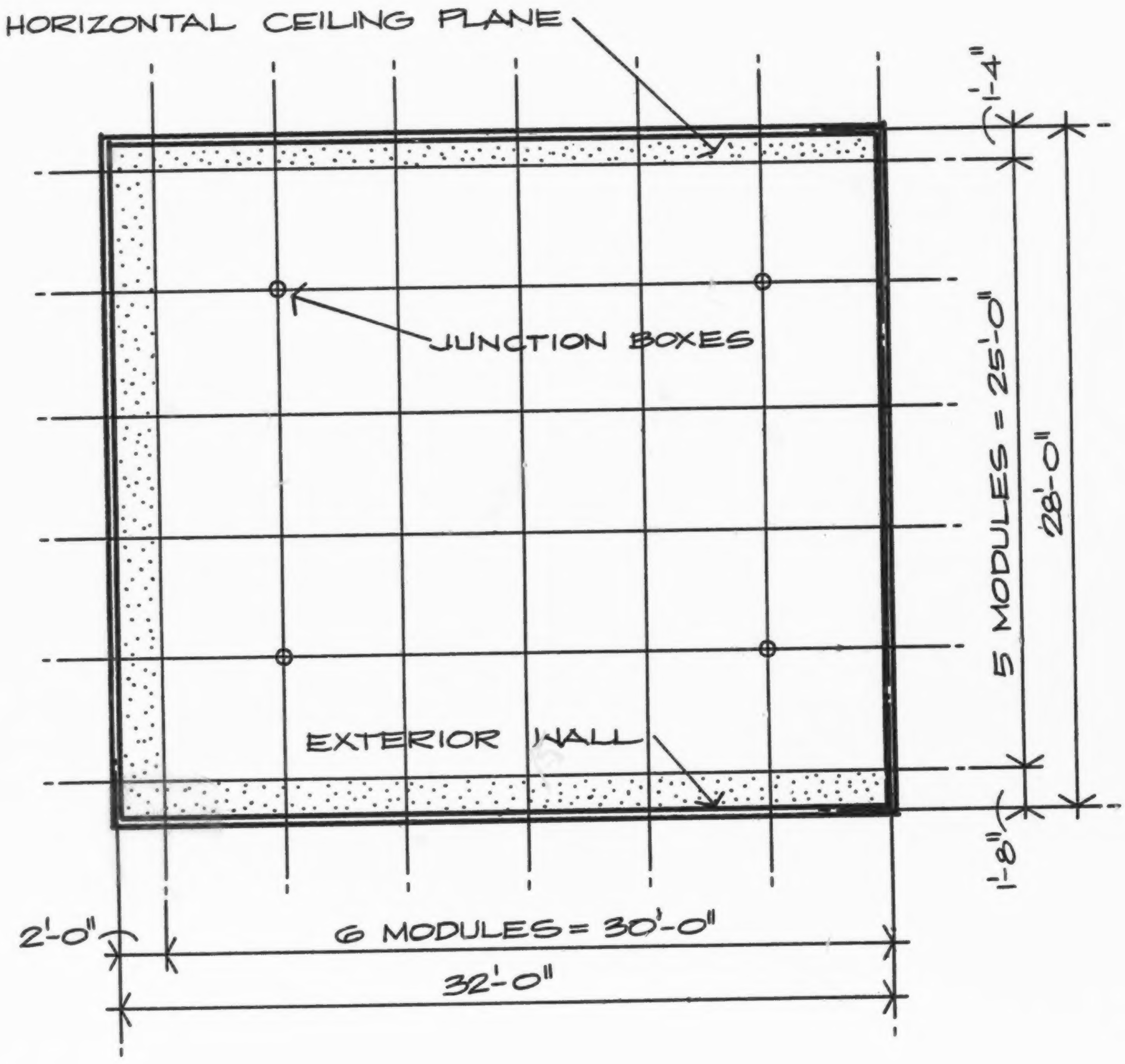
1. National Bureau of Standards
2. Riverbank Laboratories of Armour Research Foundation
3. Geiger-Hamme Laboratories

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

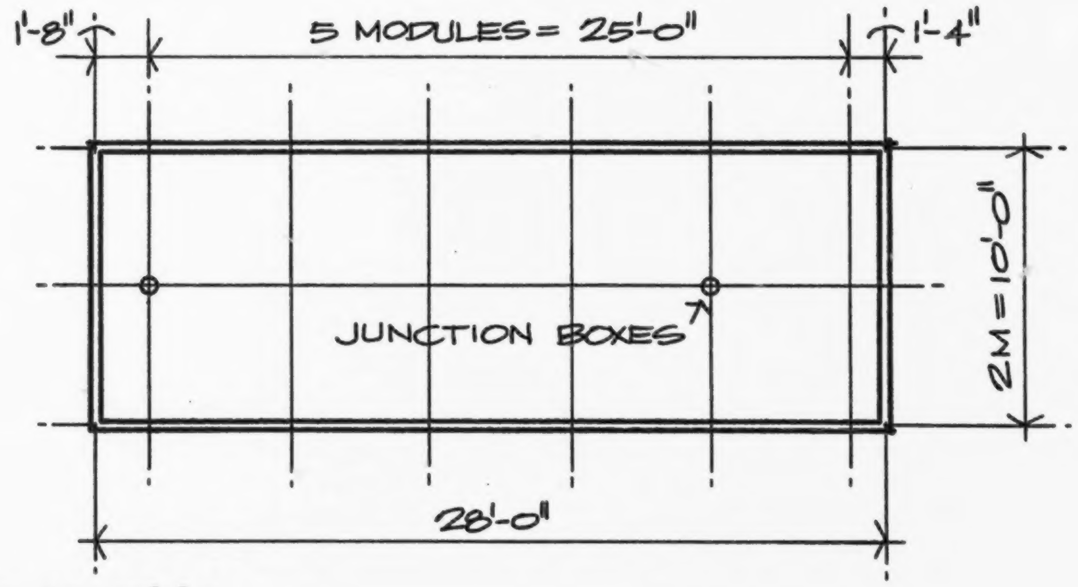
APPENDIX 3
DESIGN CONDITION ROOM DIAGRAMS

CATEGORY 8 - LIGHTING-CEILING

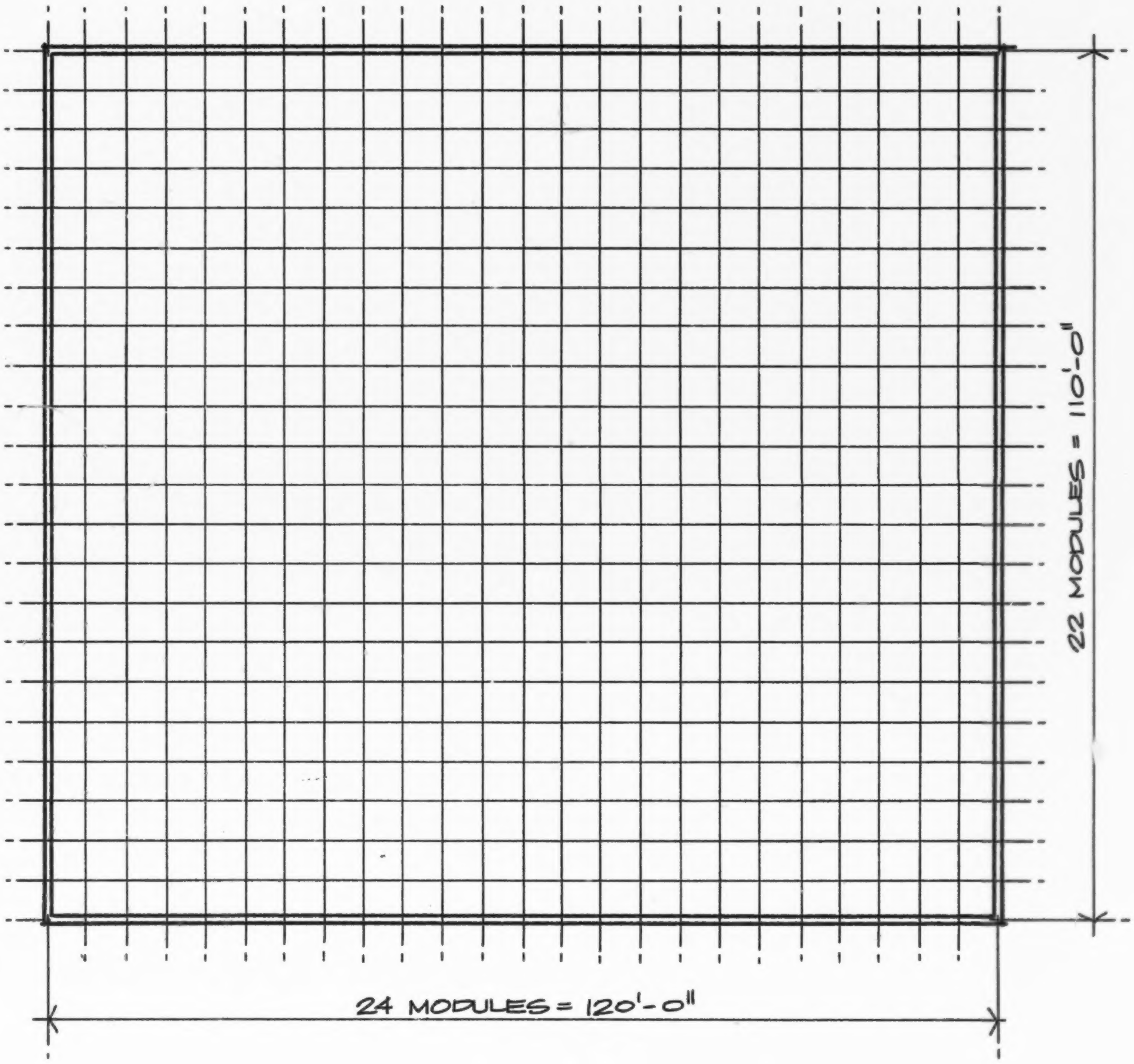
A. Academic Assemblies


HORIZONTAL CEILING PLANE
JUNCTION BOXES
EXTERIOR WALL
1'-4"
5 MODULES = 25'-0"
28'-0"
1'-8"
2'-0"
6 MODULES = 30'-0"
32'-0"

B. Corridor Assembly


1'-8"
5 MODULES = 25'-0"
1'-4"
2M = 10'-0"
JUNCTION BOXES
28'-0"

C. Gymnasium Assembly


22 MODULES = 110'-0"
24 MODULES = 120'-0"

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

BIDDING SHEETS: LUMP SUM

CATEGORY 8 - LIGHTING-CEILING

In response to the Commission's Invitation to Bid, dated July 18, 1963, the undersigned hereby proposes and agrees to furnish any and all labor, materials, equipment, transportation, and services for the development, testing, supply, and erection of the building components as called for in the Commission's Performance Specifications, Category 8, Lighting-Ceiling, for a total Enclosed Area of 1,400,000 square feet. The undersigned acknowledges that this square footage is an area used as a base for bidding and bonding, that the actual Computed Area of the project schools will be between 1,400,000 and 2,400,000 square feet, and that unit prices derived from this bid are applicable within the above stated range.

The undersigned further agrees to (a) furnish to the Commission by December 1, 1963 an itemized breakdown of all component parts of the Lighting-Ceiling systems of this Contract for approval, (b) furnish by July 1, 1964 unit prices for each of these component parts, and, (c) furnish by September 1, 1964 detailed drawings indicating the number, size and physical characteristics of each of these component parts.

It is understood that the Lighting-Ceiling components covered by this Proposal must be compatible with at least one system for heating, ventilating and cooling, and one for structure. The Lighting-Ceiling system of this Proposal is compatible with the component systems of the bidders listed here:

Heating, Ventilating and Cooling

____

____

____

____

Structure

____

____

____

____

The undersigned further agrees that his company name shall be listed on the bidding sheets of all bidders named above. It is understood that the Commission will consider component systems to be compatible only when the names of bidders are mutually listed.

It is further understood (a) that bids will be awarded only on a composite basis which includes the three component categories: structure; heating, ventilating and cooling; and lighting-ceiling, and that the bid price to be considered by the Commission will be the sum of the three lump sum figures from three compatible component categories, and (b) that if a manufacturer submits bids to cover two or three of the component categories, he shall submit a separate price for each category on the bidding sheets for that category.

For all work called for in the Performance Specifications, Category 8, Lighting-Ceiling for:

(1) the following Assemblies in the quantities shown:

Lighting-Ceiling Assemblies	Area Served
Assembly A1 - Academic	294,000 sq. ft.
Assembly A2 - Academic	98,000 sq. ft.
Assembly B1 - Academic	147,000 sq. ft.
Assembly B2 - Academic	49,000 sq. ft.
Assembly C1 - Academic	294,000 sq. ft.
Assembly C2 - Academic	98,000 sq. ft.
Assembly D - Corridor	245,000 sq. ft.
Assembly E - Gymnasium	175,000 sq. ft.
TOTAL ENCLOSED AREA	1,400,000 sq. ft.

(2) The following Accessory Items in the quantities shown:

A. 600 Small Ceiling Openings

B. 400 Large Ceiling Openings

C. 75,000 sq. ft. of High Humidity Ceiling Panels

D. 4,000 sq. ft. of 12" Furred Ceiling Return

E. 8,000 sq. ft. of 24" Furred Ceiling Return

____

______________________ DOLLARS ($ ______________)

____
(Name and quality of bidder)

By __________________________
(Title of corporate officer or
other individual executing proposal)

Dated ________________, 1963

at ____________________

Bidder's address:

____

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July, 1963
Bid Copy

PART 7 - PERFORMANCE SPECIFICATIONS

CATEGORY 9 - INTERIOR PARTITIONS

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PERFORMANCE SPECIFICATIONS

CATEGORY 9 - INTERIOR PARTITIONS

9-1 INTRODUCTION

The interior partition system includes those elements which provide vertical separation of spaces from floor to ceiling inside the building. This includes doors and panels whether they be opaque, transparent, or a combination thereof. Not included herein are those vertical elements which do not go from floor to ceiling and which have been traditionally termed space dividers. These elements which may be composed of separate panels, screens or casework will be bid as a part of the SCSD system at a later date.

Three different types of partitions shall be required for this project:

A. Fixed Partitions
Partitions which will be permanently set in place and are not designed to be moved in the future.

B. Demountable Partitions
Partitions which may be moved to a new location with minimal reworking of the partitions themselves or the components to which the partitions are attached.

C. Operable Partitions
Partitions which may be moved at will in one direction and which shall have demountable properties in the perpendicular direction. Two types of operable partitions shall be provided: panel and accordion.

Two separate bids will be taken for the various partitions. Bid A will be for all the fixed, demountable and operable partitions, panel type and bid B will be for the operable partitions, accordion type.

The total volume of the partitions will relate to the minimum total area of school construction to be included in the project. The minimum computed area is 1,400,000 sq. ft. and the maximum is 2,400,000 sq. ft. The estimated volume of partitions for the minimum project school area of 1,400,000 sq. ft. is: fixed - 32,000 lineal feet; demountable - 44,000 lineal feet; operable - 7,200 lineal feet. This volume is divided as indicated on the Bidding Sheets to most nearly approximate the cumulative desires of the member districts for the purpose of obtaining bids and establishing unit prices. The unit prices themselves will in turn affect the respective quantities of the various components which will be used.

For example, if the price of the fixed partitions is higher than expected and the price for demountable partitions lower than expected, more of the latter will be used at the expense of the former. If the price differential is sufficiently small it is conceivable that only a negligible number of fixed partitions will be used. It is anticipated that the above mentioned quantities will be required in the same proportion for any additional volume of construction above 1,400,000 sq. ft.

The same finishes shall be used on both the fixed and demountable partitions and these finishes shall be matched by those used on the panel type operable partitions. The accordion type operable partition finishes shall be related to those of the fixed and demountable partitions with respect to color and texture. The aesthetic compatability of operable partition finishes to those of the fixed and demountable partitions shall be determined by SCSD.

Incompatibility shall be reason for the rejection of the operable partition bids.

If two or more manufacturers join together to submit a bid for the fixed, demountable and panel type, operable partitions, it is strongly recommended that they coordinate their finishes before the evaluation period.

The partition system will contribute considerably to the appearance of the entire SCSD system. The detailing of the connections between adjacent portions of the total building system will be coordinated by SCSD. Consistency and simplicity of detailing is of the essence.

9-2 COORDINATION

A. Coordination during bidding period.
The different types of partitions shall be coordinated with each other and with the integrated mechanical, structural, and lighting-ceiling systems. Ceiling attachments and closure details and provision for the passage of services from horizontal to vertical planes require particular attention.

B. Coordination during development period.
This Component Contractor shall coordinate all partition developments with adjacent or pertinent building components to assure workable connections, clearances, and tolerances. SCSD will act as a central coordinating agency during this development period.

9-3 CONTRACT DOCUMENTS

Parts 1 through 6 of the Contract are a part of this section of the specifications and the work done within this contract shall be coordinated with Categories 6 through 8 of the Performance Specifications, Part 7.

9-4 SCOPE

The Component Contractor shall furnish and install all material and equipment and provide all labor required and necessary to complete the work and obtain the performance specified herein except as specifically noted below. Included is research, development and testing, supply of components and equipment, installation and supervision.

9-5 GOVERNING REGULATIONS

A. All work and materials shall be in full accordance with the current requirements of the following codes and standards:

1. The California State Fire Marshal, Title 19,* California Administrative Code.
2. The Division of Architecture, Title 21,* California Administrative Code.
3. The Uniform Building Code, 1961 Edition.
4. National Board of Fire Underwriters (NBFU).
5. Underwriters Laboratories, Inc.

B. The partition system shall provide for space, attachment and all other requirements so that the services which pass through the partitions can meet the following codes and standards:

1. Electrical Safety Orders, Department of Industrial Relations, State of California.
2. The National Electric Code (NBFU) Pamphlet 70.
3. Uniform Plumbing Code - Western Plumbing Officials Association.
4. Air Conditioning & Ventilation Systems (NBFU) Pamphlet 90A.
5. Other codes applicable to the work.

C. The Component Contractor shall arrange for and pay for all inspections and tests to assure compliance with the above codes and standards, and shall furnish copies of compliance certifications for each component to SCSD and to the applicable state agencies as required.

*Note: In cases of conflict between codes, Title 19 and 21 shall take precedence over all other codes.

9-6 WORK INCLUDED

A. Supply

1. Partitions and finishes complete including doors, glass and glazing
2. Accessory chalk and tack panels to be attached directly to partitions

3. All items necessary for attachment
4. Service panels
5. Bases and cover strips

B. Installation

1. Installation of the partition system
2. Coordination of installation with other components in accordance with time schedules as set forth by the General Contractors as outlined in the General Conditions
3. Inspection and supervision

9-7 WORK NOT INCLUDED

1. All electrical elements
2. All mechanical elements
3. All plumbing elements
4. Accessory elements which attach to the partition system, such as bookshelves and fire extinguisher cabinets, etc., except for the above mentioned accessory chalk and tack panels
5. Acoustical or light baffles to be placed above the ceiling plane

9-8 PERFORMANCE CRITERIA TESTING

Specific performance test requirements are stated herein for various aspects of the partition system. The Component Contractor shall arrange for and pay for these tests to assure compliance with the requirements. These tests shall be completed by September, 1964. The testing shall be done by an independent testing organization approved by SCSD, twenty copies of the test results shall be sent to SCSD.

9-9 HORIZONTAL PARTITION MODULE

A. The nominal partition planning module for both thickness and length shall be 3" or 4" for both fixed and demountable partitions. If a 3" module is used, a method of working with structural columns designed on a 4" module shall be developed.

B. Fixed partitions, or demountable partitions, or both shall provide for thicknesses above 3" or 4" up to 12", for the passage of plumbing or other services in all whole multiples of either the 3" or 4" module. Walls over 12" thick shall be provided by a double wall of fixed or demountable partitions. For example, if the basic wall is 4" thick, a service wall might be 8" or 12" thick, and if a 24" wall is needed it would be provided by two 4" walls. This double wall shall be ridged even though only one side has a face material.

C. In order to turn corners, accommodate walls of different thicknesses, and accommodate structural elements the fixed and demountable partitions shall provide horizontal planning flexibility equal to the horizontal module (3" or 4") for linear distances over 8'-0". If a single basic panel size is used with smaller standard panel elements to provide the required flexibility it shall provide for the incorporation of a standard 36" door and it shall relate to the 5'-0" structural module. In addition to the basic panel sizes a double door panel shall be provided. The desired panel widths to be used by the prospective bidders shall be worked out in accordance with Table 1 of the Bidding Sheets and be submitted to SCSD at the evaluation period for approval.

D. The operable partitions shall be provided in six different wall lengths equally placed above and below 30'-0". The smallest size shall be between 18'-0" and 24'-0" and the largest size shall be between 36'-0" and 42'-0". For example, the following two groups of overall widths are possible:

(1) 20'-0" 24'-0" 28'-0" 32'-0" 36'-0" 40'-0"

(2) 22'-0" 25'-4" 28'-8" 31'-4: 34'-8" 38'-0"

The individual panels used to make up the panel type operable partition shall relate to fixed and demountable partition panel widths. The desired wall lengths and panel widths to be used by the prospective bidders shall be submitted to SCSD at the evaluation period for approval.

9-10 VERTICAL PARTITION MODULE*

A. The vertical module for floor to ceiling heights shall be 2'-0" from 10'-0" to 16'-0"

B. Fixed partitions shall be provided for all modular heights up to 16'-0". For an internal staircase the total floor to ceiling height shall be considered as two floor to ceiling heights plus an extra panel equal to the depth of the floor sandwich.

C. Demountable and operable partitions shall be provided for two heights 10'-0" and 12'-0".

D. Doors shall be 7'-0" high.

E. Fixed and demountable partitions may contain glass. Glass heights shall be 3'-0", 5'-0", 7'-0", and 9'-0". Portions of solid panels to be used below glass shall be 1'-0", 3'-0", 5'-0", 7'-0", and 9'-0". To achieve wall heights (fixed walls) above 12'-0" various combinations of panel sizes mentioned in this section shall be used in combination. These panels may also be used for the inside face of exterior partitions.

* All dimensions nominal.

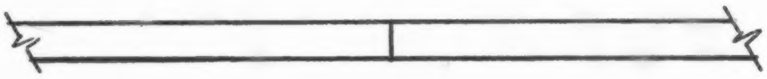
9-11 JOINT REQUIREMENTS

It shall be possible to obtain all the standard rectilinear intersections for both fixed and demountable partitions including:

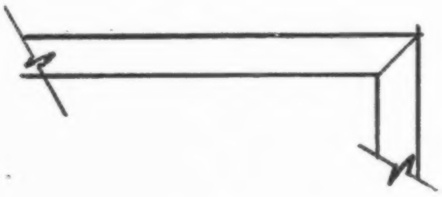
(1) a straight line joint
(2) a two panel corner joint
(3) a three panel corner joint
(4) a four panel corner joint
(5) a finished end where the panel wall is not continuous
(6) a starting end where the interior partitions meet with other components, for example, structure or exterior partitions, in a vertical joint
(7) a discontinuous joint where one panel meets another one not at its end.

If two panels intersect another panel as shown in (8), the joint shall be considered as two number (7) discontinuous joints.

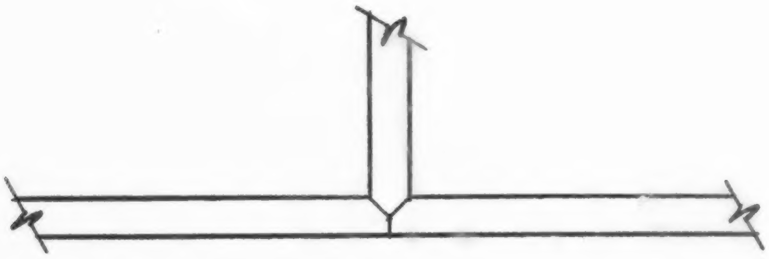
(1)



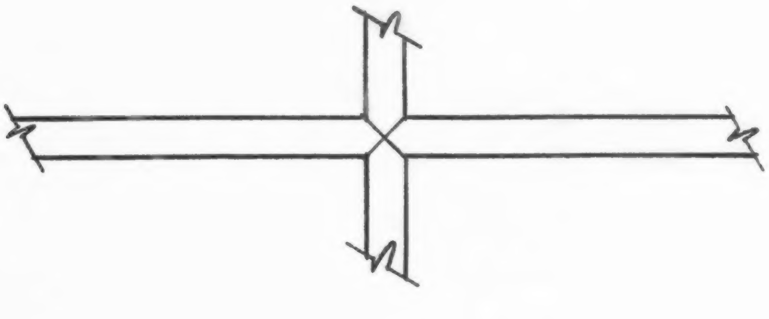
(2)



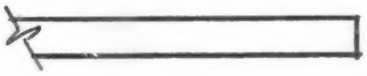
(3)



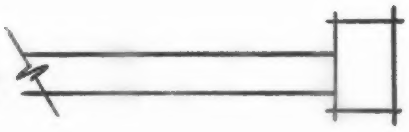
(4)



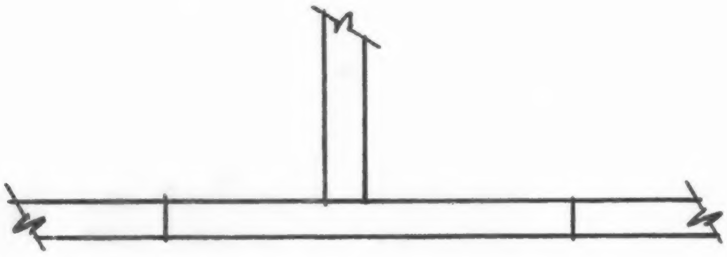
(5)



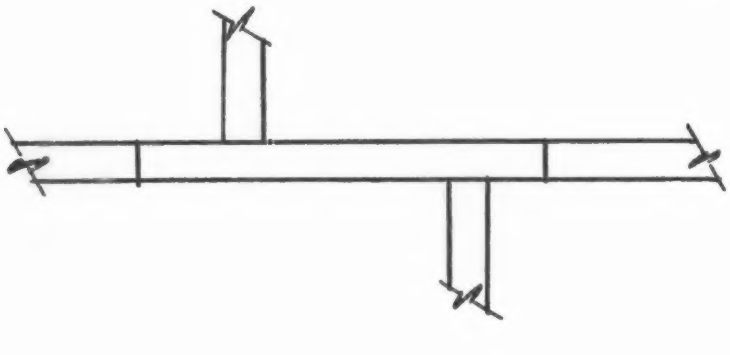
(6)



(7)



(8)



The method of illustrating the various types of joints above indicates the conditions which shall be provided for, but not the method to be used.

A single coherent detailing approach as approved by SCSD shall be used for all the different joint conditions. Vertical joints shall be de-emphasized by maintaining a flush surface across a straight line joint with no protrusions or indentations and with only one vertical line or two vertical lines not more than one inch apart, the intent being to de-emphasize a post and panel appearance. Other ways of doing this may be acceptable. Door and glazing details shall be submitted to SCSD for approval.

9-12 ATTACHMENT OF ACCESSORY OBJECTS

It shall be possible to attach objects to the fixed and demountable partition elements directly, or by means of brackets. These objects will be designed to fit the modular panel dimensions, and will consist of such varied items as: bookshelves, storage units, map rails, screens, special lighting, accessory chalkboard and tackboard elements. Chalkboard and tackboard elements shall be provided under this contract. All other items will be provided under a separate contract for accessory items.

The weight of the objects to be hung will not exceed 60 pounds per lineal foot on each side of the panel. The panels shall be designed so that they are stable when full load is imposed on one side and none on the other. This eccentric load will have to be supported at the top by the ceiling system, see section 8-10B, paragraph 22. The attachment system shall be designed so that when the supporting elements or brackets are removed, no visible mark shall be left on the partition panels themselves. Supporting systems of channels or rails will be permitted as part of the attachment system. The design of the attachment system shall be submitted to SCSD for approval.

Provisions for hanging objects on operable walls are not required.

9-13 PANEL FACES AND FINISHES

There shall be six basic types of panel faces which have specific functions. It is acceptable to perform more than a single function with a given panel surface. In all cases the solid panel finish shall cover the entire panel surface. Two separate specifications shall be met for chalk and tack finishes: the first for large areas of general use and the second for smaller areas of concentrated use. The latter requirement may be met by accessory chalk or tack panels which attach to the partitions as indicated in section 9-12.

The six basic types of panel finishes are:

A. Basic panel - durable finish but does not provide a working surface

B. Chalk panel - general use

C. Tack panel - general use

D. Glass panel

E. Back up panel - receives finishes not included in contract

F. Folding panel - operable partition, accordion type

If the performance characteristics of the tack and chalk panels do not meet the requirements outlined in section 9-14 for concentrated use, the following two accessory panels shall be provided:

G. Accessory chalk panel - concentrated use

H. Accessory tack panel - concentrated use

Fixed and demountable partitions shall meet the requirements of all the finish conditions except for F. The panel type-operable partition shall meet the requirements of A, B, and E. The accordion type operable partition shall meet the requirements of F. As outlined in the Bidding Sheets various combinations of A, B, C, and E may be used with panel D. Where doors are used the transom panel shall be A or D. If the functions of A, B, C, and E can be served by less than four panel finishes this would be desirable.

The partitions shall be designed so that the facing on one side of a partition can be changed independently of the facing on the other side.

9-14 PARTITION PERFORMANCE CRITERIA

A. Fire and Flame Spread

(1) Fixed and demountable partitions shall have both one hour and no hour fire rating requirements.
(2) It shall be possible to obtain a two hour fire rating for fire walls using the fixed partition components with additional elements which go to the underside of the structural deck.
(3) A one hour rating is not required for operable partitions.
(4) Partitions shall be rated incombustible if they are to be considered for use with an incombustible structural system. It is necessary that manufacturers bidding on a combustible partition system first determine that a combustible structural system will be developed and bid for this project.

(5) All partitions shall comply with Title 19 for flame spread for both corridor and classroom type areas. The flame spread requirements for staircases may be met outside the partition system if necessary or with a special surface material applied to Panel E.

B. Acoustics

1. The room to room sound attenuation shall be measured in accordance with the procedures outlined below. The minimum Noise Reduction Factor for the various octave bands shall be as follows through fixed, demountable and operable walls measured in the field using solid panels excluding doors:

*75 - 150 cps	18 db
150 - 300 cps	23 db
300 - 600 cps	28 db
600 - 1200 cps	31 db
1200 - 2400 cps	31 db
2400 - 4800 cps	34 db
Average	28 db

Tests shall be performed in accordance with the Provisional Code for Measurements of Sound Insulation, 1948 summer symposium of the Acoustics Group of the Physical Society in London. In general it states: The airborne sound shall be generated by loudspeakers in the transmitting room. White noise shall be used. Loudspeakers shall be placed to give as diffuse and isotropic a sound as possible.

The measurement shall be carried out in each of the above mentioned octave bands and the sound pressure level difference shall be met in all octave bands.

The tests for the operable partitions shall be repeated six months later to see if the acoustic seals continue to perform properly.

2. Tests shall be performed under actual field conditions within a room conforming to the Design Conditions, Section 8-10A, of the Lighting-Ceiling specification. This room will have a total effective absorption of 580 sabines at 500 cps. The long wall shall be used for attenuation measurements. The tests shall be performed in the phase two mock-up building or in another space acceptable to SCSD. Tests shall be performed by a testing organization acceptable to SCSD at the cost of the Component Contractor.

*This contour reflects the average overall noise reduction between adjacent classrooms found by Dariel Fitzroy in a survey conducted under an EFL grant. "Classrooms in Use," *Sound*, Vol. 2, No. 1, Pages 16-18, January-February, 1963.

3. The same tests shall be performed on a wall containing a door panel using the following contour with an average of 22 db instead of 28 db.

75 - 150 cps	12 db
150 - 300 cps	17 db
300 - 600 cps	22 db
600 - 1200 cps	25 db
1200 - 2400 cps	25 db
2400 - 4800 cps	28 db
Average	22 db

4. Fixed and demountable solid partitions shall be designed so that acoustic absorbtive material may be added to the partitions above 7'-0" to bring the absorption of the walls up to an average of .19 sabines/sq. ft. A method for providing this absorbtive function shall be presented to SCSD for review at the evaluation submission.

5. The acoustical properties of the system shall be maintained after relocation of the partitions by trained crews.

6. Chalk panels shall be designed so that the impact noise of the chalk against the panel face does not have an unbroken path for transmission through the panel.

7. The corner joint details shall be designed so that the joints do not open up under acoustic pressure.

C. Impact Resistance of Panel

1. Impact load tests shall be performed in accordance with ASTM E72-61, Section 52. The test specimens may be 8'-0" or 10'-0" in height and from 3'-4" to 4'-0" in width. Tests shall be performed on six duplicate specimens including chalk, tack, and standard panel surfaces.

For a drop of 3'-0" the upper face of the panel shall not be fractured and the instantaneous deflection of the upper face shall not exceed 1/2" for an 8'-0" high panel and 5/8" for a 10'-0" panel. The set shall not exceed 1/8".

2. In accordance with Military Specification MIL-T-1717A (Ships) paragraph 4.4.4.6 tests shall be performed on the standard panel to determine impact resistance of the surface. In brief, the test material must withstand the impact of an 8 oz. 1-1/2" diameter ball dropped from a height of 18". The surface shall not show any fracture or break.

D. Abrasion Resistance

1. Plastic laminates when tested in accordance with LP 2-2.01 of the National Electrical Manufacturer's Association standards publication "Laminated Thermosetting Decorative Sheets", May 1957, shall not have a rate of wear exceeding 0.08 grams per 100 cycles, and the wear value shall be: 200 cycles minimum for the laminates.

2. Paint finish - resistance to dry rub: Uniform appearance shall be maintained after 250 cycles on Gardner Model 105 Washability and Abrasion Machine, using cheese cloth over felt pad. There shall be no increase in gloss as measured by Gardners 60-degree Glossmeter.

3. Vinyl covering (for A, C, or H Panels) when tested using a Taber Abraser with CS 17 wheels and a 500 gram weight for 500 revolutions shall show no loss of surface printing, texture, or scuffing or breakthrough of the vinyl film. Extending to 5000 revolutions shall not scuff or break through the vinyl film.

4. Vinyl covering (for F Panel) when tested using a Taber Abraser with CS 17 wheels and a 1000 gram weight for 1000 cycles shall not lose more than 0.05 grams.

5. If other materials are used SCSD shall be contacted for appropriate abrasion tests.

E. Chalk Panel Surface

There are two different types of chalk surfaces required:

1. Chalk surface applied to entire area of solid partition panel. The reflectance values of the chalkboards shall be between 40%-50% and 12%-20%.

The board shall have a writing surface that will not crack, check or wear smooth and glossy even after extensive use. The writing surface shall contain enough abrasive material to take chalk properly and to erase easily; it shall be perfectly true and smooth, free from defects, depressions or projecting particles and must show an absolute minimum of glare. The surface shall not chip with minor indentations from a blunt instrument. Colors shall be as approved by SCSD.

In addition to the requirements specified above, the chalkboard shall meet the gloss and ghost line test in accordance with methods established by Smith-Emery Company, Los Angeles, California, report #425958, dated February 27, 1957. The requirements are as follows:

(a) The reflectance value as determined by gloss tests shall not exceed 4.0.

(b) The surface, as determined by test using 2500 gram weight applied on chalk, shall be free from visible ghost lines. Washing shall have little or no permanent effect on the surface and it shall be resistant to discoloration from scotch cellulose tape, grease pencil, crayon, wax pencil and lipstick. Slight discoloration permitted from nail polish, hair oil, citric acid (5%), sodium hydroxide (5%), bleach and ammonium hydroxide (10%).

2. Chalk surface used in accessory panel system. The reflectance value of the chalkboard shall be between 12% and 20%. Test panels of all colors shall be submitted to the Smith-Emery Testing Laboratory in Los Angeles for the Scribo and Ghost Line and Gloss Reflectance tests.

Qualifications for acceptance shall depend on the samples meeting the following minimum test requirements:

(a)	Abrasion Resistance (Dry)	
	Taber Abraser, Wheel CS-10F, 750 gram load:	
	Cycles to base material	5,000 minimum
	Cycles per unit of surface coating	1,500 minimum
(b)	Washability	
	Little or no effect	
(c)	Indentation Resistance	
	1-1/4" ball falling 40"	
	Cracks or chipping	None
(d)	Surface Adhesion	
	Number of square removed 1/16" each	None permitted
(e)	Moisture Absorption (Adhesion)	
	Number of square removed	None permitted
(f)	High Humidity (Adhesion)	
	Number of 1/16" square removed	None
	Change in surface coating	None
	Blistering	None
	Cracking	None
(g)	Chemical Resistance	
	Scotch cellulose tape, grease pencil, crayon, wax pencil, and lipstick	No effect
	Nail polish, hair oil, citric acid (5%), sodium hydroxide (5%), bleach and ammonium hydroxide (5%)	Barely visible

(h) Glossing From Wear

Reflection of original board	1.5 maximum
Reflection after testing and scrubbing	2.0 maximum

(i) Ghost Lines — None visible

(j) Finish Hardness
As measured by the Moh scale shall not be less than 6-1/2 or the Brinnel Hardness of 32.

The chalk surface shall have an overall bond to a balanced backup panel. Accessory panel shall include frame and chalk tray acceptable to SCSD.

F. Tack Panel Surfaces

There are two different types of tack surfaces required:

1. Tack surface applied to entire area of solid partition panel. The reflectance value of the tack surface shall be between 40% and 70%. Colors shall be as approved by SCSD. Tack surfaces to be penetrated by thumbtack or pushpin shall be at least 5/16" thick. Use of magnets shall be considered valud for this purpose.

The surface of the tackboard shall be washable. If laminated tackboards are to be used, delamination of the surface to backing material shall not occur in test cuts of surface.

Non-magnetic tackboards shall not show failure of the surface after receiving 400 punctures 5/16" deep, per square inch made with a standard pushpin.

2. Tack surface used in accessory panel system. This tack panel will be used for bulletin board or other extensive use requirements. A magnetic tack system will not be acceptable for this purpose. The reflectance value shall be between 30% and 50%. Colors shall be as approved by SCSD. Tack surfaces shall be at least 1/2" thick.

The surface of the tackboard shall be washable. If laminated tackboards are to be used, delamination of the surface to backing material shall not occur in test cuts of the surface.

Tackboards shall not show failure of the surface after receiving 800 punctures 5/16" deep, per square inch made with a standard pushpin. The surface itself shall be self-healing and obscure the puncture as soon as the tack or pushpin is removed.

G. Maintenance

For panels A and F:

1. Accelerated weathering - 900 hours exposure in a National Carbon Co. X-1 Weathering Machine, with no fading or rusting (slight dulling of surface permitted).

2. Humidity Resistance - 400 hours in atmosphere with 100% humidity and temperature of 100 degrees F. with no appreciable deterioration.

3. Washability - 400,000 brush strokes while immersed in a 5% solution of trisodium phosphate in a Gardner Straight Line Washability Machine (Model 105) without any softening or more than slight abrading of the surface.

4. Repair of Surface - Marks due to cutting or scratching of the surface shall be easily repairable in the field by the custodial staff so that they are not noticeable unless a Bierbaum scratch hardness value of 20 is met or an equivalent test approved by SCSD.

H. Color and Texture

1. Colors and textures of finished surfaces as approved by SCSD. Reflectance factor for the 19 basic partition colors shall be between 12% and 75%.

The basic range is divided so that 6 colors are chosen for Panel G, 6 colors for Panel H, and 7 colors for Panels A, B, C, and F. A sample color range is outlined below as an example. An extended range is included which adds 18 colors for panels A or C. This results in a total range of 25 colors for A or C and the additional 18 colors may be divided between the two panels if desired. Two of these 18 colors are already used for Panels G and H. The colors of the extended range will have a reflectance factor ranging between 6% and [illegible]%.

Panels A and/or C shall be available in a range of 25 colors. The colors of the extended range will be used in limited quantities basically as an accent. The colors may be applied in the factory or in the field by painting, laminating or any other process to meet these specifications. If a laminated material capable of providing a variety of textures is used for this purpose, at least three different textures shall be provided.

Proposals for a color range shall be submitted for review by SCSD at the evaluation submission.

SAMPLE RANGE OF 35 COLORS (MUNSELL DESIGNATION)

Color	Basic Range			Extended Range
	Panels G*	Panel H*	Panels A B C & F	Panels A and/or C
Gray	2.5Y4/0.5	2.5Y6/0.5	2.5Y 8/0.5	N9.5 10B4/0.5 2.5Y4/0.5
Red			7.5R 8/2	5R 4/14 7.5R 8/4
Yellow Red	5YR 4/8	10YR 6/4	15YR 8/2	15YR 6/12 5YR 5/10 10YR 6/4
Yellow	5Y 5/2	5Y 6/2	5Y 8/2	5Y 8/12 5Y 7/10 5Y 7/6
Green Yellow	5GY 5/4 5GY 5/2	5GY 7/2	5GY 8/2 5GY 8/1	5GY 7/10 5GY 9/1
Green				5G 7/2
Blue Green		7.5BG6/2		10BG 5/4
Blue	7.5B 5/2	7.5B 7/2	7.5B 8/2	7.5B 6/6
Purple Blue				2.5PB 3/8
Purple				
Red Purple				RP 8/6
NUMBER	6	6	7	18
REFLECTANCE	12-20%	30-42%	56-72%	6-80%

*Accessory panel trim shall be matte finish, painted if metal.

2. 2. Tests

(a) Ultra-violet resistance: there shall be no appreciable color change after 200 hours in the Atlas Fadeometer.

(b) Light and Darkness Color Uniformity: a panel half covered by aluminum foil and placed in diffused daylight for one week shall show no color change between the covered and uncovered areas directly after color is applied.

9-15 PASSAGE OF SERVICES

Provision for both vertical and horizontal passage of 7/8" electrical conduit or lay-in wiring in a wiring raceway shall be made in both the fixed and demountable partitions. Horizontal passage shall be provided at base and top of panel. Vertical passage shall be provided in each panel or panel joint including passage around a door in the door panel. Base outlets shall be located no less than 4" or more than 6" from the floor so that the base molding described in 9-16 will totally obscure the unused openings. Provision shall be made so that the openings for outlet boxes shall be provided readily. 277-24 volt lines shall be accommodated in both demountable and fixed partitions. Higher voltage lines will be run through fixed partitions only. Details shall be submitted for approval by SCSD.

The system of demountable and fixed partitions shall have hollow service panels to house the following services: thermostat, switches, communication system, TV jack, clock, telephone, etc. Design and location of cutouts for these services shall be identical for the 10'-0" and 12'-0" high partitions. Design of service panels shall be worked out with SCSD and shall be coordinated with 7-13C. This component contractor will not be required to install services but only to supply the panels.

The partition system shall be designed so that switches can be accommodated on the job in locations other than the service panel if necessary.

It shall also be possible to recess large items, such as drinking fountains, fire extinguisher cabinets, panel boards, etc., in a fixed wall of sufficient thickness, on the job although the work would be done by others. Provisions shall be made to enclose all plumbing lines and vents within the fixed partitions, or by using two separate fixed or demountable partitions to block the plumbing lines in. The installation of the plumbing lines will be done by others and is not included in this contract. Within the plumbing walls, horizontal runs of up to 30' must be handled.

9-16 ATTACHMENT OF PARTITIONS

A. Base

1. Demountable and Fixed Partitions

Partition attachment at base may be to the slab through the floor finish material. A method of attachment which does not damage the floor finish is desired.

A six inch base molding as approved by SCSD shall be provided which is reuseable when the demountable partitions are moved or when services are installed. The base molding for the fixed partitions shall also be removable. The base molding shall have a maximum projection of 3/8", and shall adjust to specified floor variations. The total base configuration shall provide continuous light and sound seal at floor contact.

2. Demountable, Fixed and Operable Partitions

The base details shall be designed so that compensation may be made for variations in floor height. The maximum slope will be 3/4" in 20'-0". The maximum floor variation from a bench mark will be two inches overall. If these conditions are not met it will be the responsibility of the General Contractor to level the floor prior to the installation of the interior partitions.

The colors for the base shall be developed on a range similar to the following: 2.5Y 6/0.5, 7.5R 6/2, 10YR 6/2, 5Y 6/2, 10GY 6/2, 5G 6/1 and 5B 6/2. The colors shall be as approved by SCSD.

3. Operable Partitions

The base shall be designed to match the demountable and fixed partitions as closely as possible. A threshold of 5/8" maximum is permissible.

B. Top

1. Demountable and Fixed Partitions

Partition attachment at top shall be to support points located 5'-0" on center. The supports will be provided as part of the lighting-ceiling, structural, and mechanical sandwich. A number of different head conditions will exist and shall be provided for including attachment to: structure, ceiling panels and/or supporting rails, subsidiary bracing members, and filler members. The material and surfaces to which attachment may be made will be provided as part of the Lighting-Ceiling Component Contract. The maximum variation in height of these attachment surfaces will be ± 1/2 inch from dead level. (This does not include the potential deflection of the structure due to live loads which shall also be compensated for by the partition system.)

If the variation is greater, it will be the responsibility of the Lighting-Ceiling contractor to level the ceiling before this Component Contractor begins work. If smaller tolerances are essential for a particular partition system, the partition bidder must obtain approval from a Lighting-Ceiling bidder that he can hold to smaller tolerances. The partition bid will then be related to the success of this compatible Lighting-Ceiling bid.

If a ceiling molding is used it shall be from 2-1/2"-4" wide and a maximum of 3/8" thick. The molding shall be removable and reuseable. The color shall be chosen to match the ceiling. The head details shall provide a continuous light and sound seal at ceiling contact.

If a partition system is developed on the basis of exerting pressure against the ceiling it shall be related to a ceiling system capable of taking the pressure.

2. Operable Partitions

The supporting frame shall be attached to the structure through the ceiling if necessary and shall provide a continuous light and sound seal at ceiling contact and relate visually to the fixed and demountable partitions. The moving parts shall be supported by the frame. The building structure will provide lateral support for shear load but this Component Contractor shall have responsibility for the connection between partition and structure. Details showing the way in which the supporting frame and the ceiling system meet shall be as approved by SCSD. Sufficient tolerance shall be allowed to permit the demounting and re-erection of the partitions.

C. Corner

1. Demountable and Fixed Partitions

The partition corner details shall provide for sufficient strength so that the wall is secure and complies with code requirements when none of the walls meeting at a corner fall directly beneath a supporting structural member. The maximum distance from a top support will be 5'-0" less the thickness of the partition. At the corners a channel or cover strip will be permitted up to a width of 2" and a thickness of 1/8" if the details are consistent and are visually acceptable to SCSD. The finish of this cover strip or channel shall be consistent with that of the panels.

D. End

1. Demountable and Fixed Partitions

The end of a run of partitions shall occur when the partitions intersect other components or form an open space. The partitions shall be secure when unsupported at the end and a maximum distance from a top support of 5'-0" less the thickness of the partition. When the partitions intersect another surface that surface will be true and smooth. The end jointing detail shall have ability to cope with variations of up to 3/8" and provide a continuous light and sound seal.

An appropriate end condition joint shall be developed so that interior partitions and exterior wall members form an acoustically tight and structurally acceptable joint. The details shall be worked out in relation to the exterior wall components, and both wall systems shall adhere to the same modular basis. In all cases the exterior wall products will provide a 90° vertical face not less than 2" wide to which the interior partitions may be attached. Given this condition, the responsibility for this joint shall be that of this Component Contractor.

2. Operable Partitions

The supporting frame shall be attached at top and bottom to slab and structure and the attachment at the side shall be for acoustic and light purposes. The frame shall be sufficiently shorter than the nominal dimension in which it is to fit for purposes of erection and tolerance. The edge closure details shall relate visually to the fixed and demountable partitions.

9-17 DIAGONAL BRACING AND SHEAR WALLS

Interior wall components capable of taking lateral loads will be designed by the individual architects and their engineers. These walls may be faced with the same finishes as the fixed walls supplied and installed by this Component Contractor as required. The wall dimensions will be chosen so that the interior partition panel faces fit without alteration. Panel faces covering shear walls need not be interchangeable as described in 9-13.

Diagonal bracing members, if used, shall be closed in and covered by this Component Contractor in a manner similar to plumbing lines.

9-18 WEIGHT, INSTALLATION AND REPLACEMENT OF PANELS

1. Demountable Partitions

It shall be possible for two school custodians to install and/or replace individual partition panels. A single panel in the middle of the run shall be replaced in two hours by two custodians, and a 28'-0" wall moved from one location to another in sixteen hours by four custodians as a test on the mock-up building. It is anticipated that major changes would be made in the plan of the project schools during vacation periods and that these changes would probably involve outside personnel. The weight of any individual portion of the panel system to be moved as a single piece shall not exceed 200 lbs. The panel system and elements to which the panels attach shall be reuseable. The replacement of seals, tile, moldings, etc., shall be held to a maximum of $1.00/lin. ft. of partition when panels are relocated. A manual of instructions describing the process for relocating panels shall be provided to the custodial staff of each school.

Additional panels or panel facings shall be available on an individual basis for at least five years after completion of each school. A proposal suggesting the pricing structure for these panels shall be submitted to SCSD at the evaluation period. These prices should be related to the ENR Index or another appropriate index and should reflect the size of the individual orders for extra panels.

2. Operable Partitions

It shall be possible to move an operable partition with a trained crew of men in a week. The frame which supports the operable partition shall be designed so that it can be dismantled for purposes of moving. The operable partitions shall be designed so that they can be moved at a cost not to exceed one thousand dollars per opening. If the districts cannot obtain local contractors to work within this price this Component Contractor shall move these partitions at a price of one thousand dollars plus escalation according to the ENR Index for a period of three years after completion of the school. One operable wall shall be moved by this Component Contractor as part of the mock-up testing.

3. Accessory Chalk and Tack Panels

The panels shall be 4'-0" x 4'-0" and 4'-0" x 8'-0". The maximum panel weight shall be 96 pounds. The panel shall include a chalk tray.

9-19 DOORS

1. Demountable and Fixed Partitions

Door panels shall be provided for single and double doors. The actual width of the door openings shall not be less than 3'-0" and the height shall be a nominal dimension of 7'-0". The double door shall be made up of two single doors of 3'-0". The nominal dimension of the panel consisting of door plus frame shall be a modular size.

The door panels shall be detailed so that two single door panels can be put next to each other in an in-line condition as shown as joint number 1 in 9-11. The joint system shall also be detailed so that any of the panels meeting in a corner condition in joints 2, 3, or 4 in 9-11 could be a door panel.

Solid core hardwood and/or hollow metal doors having a thickness of 1-3/4" will be accepted which meet the following standards with their tests:

Solid Core Bonded Hardwood Doors Good Grade Type II	State of California Latest edition - Standard Material List Commercial Standard CS 171-58 Reprinted June 1962 with amendments
Hollow Metal Doors	Navdocks Specification 32Y6 June 1961 plus Addendum No. 1, Dec. 1961

Wood doors shall be cross banded at right angles to the case with a 1/10" veneer. They shall last for 20 minutes under the standard fire test. All glass shall be 1/4" wire glass set in steel frames. Wood doors may be used in Type IV construction. B and C labeled doors shall be provided as part of the system where required.

In addition to the requirements for solid doors, a maximum of six combinations of solid, glass and louver doors shall be provided for single doors and two combinations for double doors. Door louvers to be set in a 1 hour wall will be fire dampered. The maximum size of louvers permitted by code is 24" x 48". Louvers will be provided and installed by others.

The design of the doors shall be as approved by SCSD. The six doors shall meet the following requirements:

Single Doors
1. Solid door
2. Glass Door - 37-50% glass
3. View door (1) - 18-25% glass

4. View door (2) - 9-12% glass
5. View door (3) - 4-6% glass
*6. Louver door - 15-25% louver

Double Doors
7. Solid doors
8. View doors - 9-12% glass

Doors and frames shall be drilled and tapped to receive hardware designed according to Federal Specification FF-H-106a, Series 161. Door closures shall be concealed within the door frame or panel. Doors designed to meet other special requirements will be handled outside the system. Standard door frames shall be provided to receive special doors of the same overall dimensions as the standard doors.

2. Operable Partitions

A 3'-0" wide pass door of 6'-8" or more to fit into the panel operable partitions shall be provided as part of the partition system at a given unit price. This pass door shall provide the same acoustic requirements as the standard doors.

9-20 HARDWARE

1. Demountable and Fixed Partitions

This bid shall include the installation of hardware and the hanging of the doors. Hardware will be furnished by others and conform to the most recent issue plus all amendments of the following standards:

a. Federal Specification FF-H-106a, Series 16 for locks

b. Federal Specification FF-H-121C Type 3225 Style E for concealed door closures

c. Federal Specification FF-H-111a Type 1160 and 1161 for concealed automatic door holders and silencers

d. Federal Specification FF-H-116c for hinges use 5" x 4" butts

Applied items such as push plates, door pulls, and kickplates shall also be installed. Exit devices will not be included in this Component Contract. Bidders shall suggest a schedule for unit prices for installation of hardware at the evaluation submission for approval by SCSD.

2. Operable Partitions

Hardware for pass doors in the operable partitions shall be provided as part of the door price. All hardware for operable partitions shall be as approved by SCSD.

*Louvers supplied by others.

9-21 LOUVERS

Glass, wood, or metal louvers will be installed by others in place of a glass panel in a small number of partition panels. For this reason separate unit prices shall be given for glass and glazing of the glass partition panels.

9-22 GLASS AND GLAZING

This Component Contractor shall include all glass and glazing for the partitions. Glazing details shall be as approved by SCSD. Unit prices shall be given for the different types of glass. Glass type and thickness shall be selected in accordance with Title 21. In a one hour wall 1/4" fixed welded wire glass set in not less than a 16 ga. cold rolled frame is required. The largest piece of wire glass will be 1200 sq. in. to be set in a one hour wall. Larger glass panels will be used in no hour panels. Glass types shall be presented to SCSD for approval.

9-23 TOLERANCES

Panel tolerances may of necessity vary with the materials used, and the manufacturing processes. Requests for variations from stated tolerances will be considered by SCSD at the evaluation stage. All tolerances shall be negative rather than plus or minus values so that the panels will always fit into the nominal distance. For example, a panel may be 4'-0" + 0-1/8 rather than 4'-0" ± 1/16. The system shall have sufficient tolerance to lose or gain a dimension equal to the panel tolerances plus 1/8" to compensate for inaccuracies in the construction of the building.

9-24 OTHER REQUIREMENTS

1. Although the frame for the operable demountable partition shall be capable of supporting the weight of the partition itself, it will be stayed laterally by attachment to a structural member supplied as part of the structural contract and above and parallel to the operable wall, or by attachment to structural members running perpendicular to the operable wall at no more than 15'-0" centers. These members will be provided as a part of the structural contract. All operable partitions will be located so they cross at least two structural members.

2. Operable walls shall be designed so that they may be readily moved and seated by a single teacher. If a bidder wishes to offer mechanical means of operating the partitions, unit prices for this mechanism shall be submitted at the same time that other unit prices are due. This item will then be considered an optional part of the total building system. The operable partitions tested in the mock-up building will be manually operated.

3. The vertical depth of the supporting frame shall be 2'-0" or less.

4. Besides guarantees required elsewhere, this Component Contractor shall guarantee the operation of the operable partitions for a period of five years. This Component Contractor shall be held responsible for, and must make good, any defects in the operation of these partitions as installed by this Component Contractor. This guarantee shall be submitted in writing to the architect for each district before final payment will be certified.

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

BIDDING SHEETS: (A) LUMP SUM

CATEGORY 9 - INTERIOR PARTITIONS
FIXED, DEMOUNTABLE AND PANEL TYPE OPERABLE PARTITIONS

In response to the Commission's Invitation to Bid, dated July 18, 1963, the undersigned hereby proposes and agrees to furnish any and all labor, materials, equipment, transportation, and services for the development, testing, supply, and erection of the building components as called for in the Commission's Performance Specifications for Fixed, Demountable, and Panel type operable partitions only, Category 9, Interior Partitions, for a total Enclosed Area of 1,400,000 square feet. The undersigned acknowledges that this square footage is an area used as a base for bidding and bonding, that the actual Computed Area of the project schools will be between 1,400,000 and 2,400,000 square feet, and that unit prices derived from this bid are applicable within the above stated range.

The undersigned further agrees to furnish to the Commission by July 1, 1964 unit prices for each component. The unit prices required are set forth by the section of this Contract entitled BIDDING SHEETS: (B) UNIT PRICES.

The undersigned further agrees to furnish by September 1, 1964 detailed drawings indicating the number, size, and physical characteristics of each component.

It is understood that the Fixed, Demountable, and Panel type operable partitions covered by this Proposal must be compatible with at least one system for Accordion type operable partitions. The partitions of this Proposal are compatible with the Accordion type operable partitions of the bidders listed here:

____

____

____

The undersigned further agrees that his company name shall be listed on the bidding sheets of all bidders named above. It is understood that the Commission will consider partition systems to be compatible only when the names of bidders are mutually listed.

It is further understood (a.) that bids will be awarded only on a composite basis which includes the two partition groupings: (1) Fixed, Demountable, and Panel type operable; and (2) Accordion type operable, and that the bid price to be considered by the Commission will be the sum of the two lump figures from the two compatible groupings and (b) that if a manufacturer submits bids to cover two groupings, he shall submit a separate price for each grouping on the bidding sheets for that grouping.

For all work called for in the Performance Specifications, Category 9, Interior Partitions, Fixed, Demountable and Panel Type Operable.

____

________________________ DOLLARS ($______________)

____
(Name and quality of bidder)

By ________________________
(Title of corporate officer or other individual executing proposal)

Dated ____________, 1963

at __________________

Bidder's address:

____

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

BIDDING SHEETS: (B) UNIT PRICES

CATEGORY 9 - INTERIOR PARTITIONS
FIXED, DEMOUNTABLE AND PANEL TYPE OPERABLE

UNIT PRICES

The successful bidder shall fill out the bidding sheets below to give unit prices for each component part of the system by July 1, 1964.

Bidder shall select panel sizes for demountable and fixed partitions to give 3" or 4" flexibility using plan A, B, C, D, E, or F below. The plan chosen shall determine the percentage of lineal feet of partition used for each panel size.

TABLE 1

PLAN	PANEL SIZES AND TYPES			
	Under 24"	24" - 35"	36" - 48"	Over 48"
A	20%		80%	
B		20%	80%	
C	10%	10%	80%	
D	20%		40%	40%
E		20%	40%	40%
F	10%	10%	40%	40%

When more than one panel size is selected in a range of sizes the most economical size shall be stated and it will be used three times as much as each of the other sizes in that group which will be used equally. For example: using a range of four panel widths 24", 36", 40", and 48" which fits Plan B and assuming 48" the most economical size the following percentages result:

A	24" = 20%	20%
	36" = 16%	
	40" = 16%	80%
	48" = 48%	

B See example Bidding Sheet 79-29.

24": 20% of 44,000 lineal feet of demountable partitions = 8800 lineal feet

$$\frac{\text{8800 lineal ft.}}{\text{2 ft. per panel}} = \text{4400 panels}$$

36": 16% of 44,000 ft. = 7040 ft. = 2346 panels

40": 16% of 44,000 ft. = 7040 ft. = 2133 panels

48": 48% of 44,000 ft. = 21,120 ft. = 5280 panels

C Panels type 1, 2, 3, 6, 7, and 8 shall be divided equally between 1 hour and no hour requirements. The other panels will have a no hour requirement. The price for the one hour requirement shall be placed over that for the no hour requirement.

D 4400 panels of 24" width

Panel type 1: 66% of 4400 panels = 2904 panels
1/2 = 1452 panels

Panel type 2: 8% of 4400 panels = 352 panels
1/2 = 176 panels

Panel type 3: 2% of 4400 panels = 88 panels
1/2 = 44 panels

Panel type 4: 2% of 4400 panels = 88 panels

EXAMPLE
DEMOUNTABLE PARTITIONS 44,000 LINEAL FEET

Panel Frame

Height and Type	% Use	Panel Widths Selected According to Plan A, B, C, E, or F												Service Panel Most Used Panel Size	
		Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6			
		24" (20%)		36" (16%)		40" (16%)		48" (48%)							
10'-0"		Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
1. Solid	68	1495 1495		799 798		725 725		1795 1994						360	
2. Glass 7'-0" to 10'-0"	3-1/2	77 77		41 40		37 38		92 93						-	
3. Glass 5'-0" to 10'-0"	2	44 44		23 24		21 22		53 53						-	
4. Glass 3'-0" to 10'-0"	1-3/4	78		41		37		92						-	
5. Glass 1'-0" to 10'-0"	1-1/4	56		29		27		66						-	
12'-0"															
6. Solid	20	440 440		234 235		213 213		529 529						90	
7. Glass 9'-0" to 12'-0"	1-1/2	33 33		17 18		16 16		39 40						-	
8. Glass 7'-0" to 12'-0"	1	22 22		11 12		10 11		26 27						-	
9. Glass 5'-0" to 12'-0"	1/2	22		12		11		26						-	
10. Glass 3'-0" to 12'-0"	1/2	22		12		11		26						-	
	100%	4400 Panels		2346 Panels		2133 Panels		5280 Panels							

I. DEMOUNTABLE PARTITIONS 44,000 LINEAL FEET

Panel Frame

Height and Type	% Use	Panel Widths Selected According to Plan A, B, C, E, or F												Service Panel Most Used Panel Size	
		Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6			
		Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
1. Solid	68													360	
2. Glass 7'-0" to 10'-0"	3-1/2													-	
3. Glass 5'-0" to 10'-0"	2													-	
4. Glass 3'-0" to 10'-0"	1-3/4													-	
5. Glass 1'-0" to 10'-0"	1-1/4													-	
12'-0"															
6. Solid	20													90	
7. Glass 9'-0" to 12'-0"	1-1/2													-	
8. Glass 7'-0" to 12'-0"	1													-	
9. Glass 5'-0" to 12'-0"	1/2													-	
10. Glass 3'-0" to 12'-0"	1/2													-	
	100%														

II. FIXED PARTITIONS 32,000 LINEAL FEET

Panel Frame

Height and Type	% Use	Panel Widths Selected According to Plan A, B, C, E, or F												Service Panel Most Used Panel Size	
		Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6			
10'-0"		Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
1. Solid	66													280	
2. Glass 7'-0" to 10'-0"	3-1/2													-	
3. Glass 5'-0" to 10'-0"	2													-	
4. Glass 3'-0" to 10'-0"	1-3/4													-	
5. Glass 1'-0" to 10'-0"	1-1/4													-	
12'-0"															
6. Solid	18													70	
7. Glass 9'-0" to 12'-0"	1-1/2													-	
8. Glass 7'-0" to 12'-0"	1													-	
9. Glass 5'-0" to 12'-0"	1/2													-	
10. Glass 3'-0" to 12'-0"	1/2													-	

II. FIXED PARTITIONS 32,000 LINEAL FEET (continued)

Panel Frame

*Height and Type	% Use	Panel Widths Selected According to Plan A, B, C, E, or F												Service Panel Most Used Panel Size	
		Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6			
		Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
*14'-0"															
11. Solid	2													-	
*16'-0"															
12. Solid	2													-	

100%

*Other configurations of 14'-0" and 16'-0" panels will be used so infrequently that they will be built outside the system. The same holds true for panels over 18'-0".

III. TWO HOUR FIXED PARTITIONS

Cost per square foot to modify fixed partition to 2 hour fire wall. $____________

The area between the ceiling plane and the structural deck shall be protected, but this area shall not be included when figuring the square foot price. Bidders shall include in lump sum bid 18,000 square feet of fixed partitions so modified.

IV. MODIFIED FIXED PARTITIONS

Cost per square foot to obtain thicker panels. The possible thicknesses are: 8" and 12" or 6", 9" and 12" depending on the module. If the cost of these panels is greater, give square foot prices for the increase in cost for the appropriate module. Bidders shall include in the lump sum bid the prices of (A) or (B).

(A) 4" Module

Thickness of Wall	Quantity	Price
8"	18,000 sq. ft.	
12"	18,000 sq. ft.	

(B) 3" Module

Thickness of Wall	Quantity	Price
6"	12,000 sq. ft.	
9"	12,000 sq. ft.	
12"	12,000 sq. ft.	

V. SWITCHES

Openings in panels or posts to accomodate switches as required in 9-15 shall cost $_______ per unit. The lump sum bid shall include the cost of providing openings in one specific location at panel or post for 5000 switches.

Note: It is assumed that the unit prices for the panel faces will hold for use on the inside face of exterior partitions, if applicable, and to cover interior structural walls if desired. If this is not so, bidders shall indicate requirements for pricing these items at the evaluation submission and a costing framework will be developed.

VI. DEMOUNTABLE AND FIXED PARTITIONS 132,000 LINEAL FEET

Panel Faces (one side)

Height and Type	% Use	Panel Widths Selected According to Plan A, B, C, E, or F											
		Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6	
		Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
SOLID													
*16'-0" standard	1												
*14'-0" standard	1												
12'-0" standard	8												
12'-0" chalk	4-1/2												
12'-0" tack	5-1/2												
12'-0" back up	1												
10'-0" standard	27												
10'-0" chalk	16												
10'-0" tack	20												
10'-0" back up	4												
TOTAL SOLID	88%												

*May be made up by a combination of two smaller panel faces.

VI. DEMOUNTABLE AND FIXED PARTITIONS 132,000 LINEAL FEET (continued)

Panel Faces (one side)

Height and Type	% Use	Panel Widths Selected According to Plan A, B, C, E, or F											
		Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6	
		Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
SOLID PORTION MIXED PANELS 9'-0" standard	1-1/2												
7'-0" standard	1-3/4												
7'-0" chalk	1-1/2												
7'-0" tack	1-1/4												
5'-0" standard	2-3/4												
3'-0" standard	2-1/4												
1'-0" standard	1												
PART SOLID PANELS	12%												
GLASS° PORTION MIXED PANELS 3'-0" wire glass	2-1/2												
3'-0" glass	2-1/2												
5'-0" wire glass	1-1/2												
5'-0" glass	1-1/2												
7'-0" glass	2-1/4												
9'-0" glass	1-3/4												

PART GLASS PANELS 12%

°Panel widths under 24" in size shall not be figured as glazed but the lineal footage of glazed area shall be added to the largest panel size.

VII. DOOR TYPES
Section 9-19

(Nominal Widths)

	DEMOUNTABLE				FIXED				OPERABLE - PANEL	
	40" - 42" Door Panel		76" - 78" Double Door Panel		40" - 42" Door Panel		76" - 78" Double Door Panel		36" Pass Door	
10'-0" Type	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
1	342		-		230		-		48	
2	114		-		78		-		-	
3	288		-		192		-		-	
4	288		-		192		-		-	
5	288		-		192		-		-	
6	114		-		78		-		-	
7	-		22		-		14		-	
8	-		45		-		26		-	
12'-0" Type										
1	90		-		60		-		12	
2	30		-		20		-		-	
3	72		-		48		-		-	
4	72		-		48		-		-	
5	72		-		48		-		-	
6	30		-		20		-		-	
7	-		12		-		10		-	
8	-		17		-		13		-	

Unit costs for B and C label doors as required.
Cost increase for B label over type 1 doors $ ____________
Cost increase vor C label over type 1 doors $ ____________

Lump sum bid to include the cost of 80 B label doors and 120 C label doors.

Where special doors are to be located in standard frames the cost per door frame shall be given:

A 10'-0" frame, fixed $____________
B 12'-0" frame, fixed $____________
C 10'-0" frame, demountable $____________
D 12'-0" frame, demountable $____________

Include in the lump sum bid: forty-A, twenty-B, fifty-C, and twenty-five-D.

VIII. JOINTS

If price variations must accompany some of the different joint conditions required in section 9-11 using the straight line condition (1) as the base price, indicate additional cost.

Work with the number of panel frames shown on the Demountable and Fixed Partition Bidding Sheets. Assume one joint per panel frame for the purpose of determining the lump sum bid.

Joint Type	Occurrence of condition - % of total joints	Increased price per joint	Total Price
1	50%	Base price	$_______
2	7%		$_______
3	11%		$_______
4	3%		$_______
5	2%		$_______
6	11%		$_______
7	6%		$_______

IX. ACCESSORY PANEL SYSTEM

Accessory Chalk Panel		Accessory Tack Panel*	
Quan.	Price	Quan.	Price
·2000		1400	

If an increase in price is required for partition panels to receive brackets for hanging items other than the accessory chalk and tack panels, indicate cost increase per lineal foot of section to take brackets. Then 30,000 lineal feet of rails, channels or other sections shall be included in this bid for attachment of various items. Cost per lineal foot $__________. The cost of hanging accessory chalk and tack panels shall be included in the price of those panels.

*If magnetic tackboards are used increase the number of accessory tack panels to 2800 for the lump sum bid.

X. *OPERABLE PARTITIONS - PANEL TYPE

Nominal Length of Opening to be Filled by Partition & Frame°

Panel Height	Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6	
	°		°		°		°		°		°	
	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Pric
10'-0"	12		24		30		30		24		18	
12'-0"	4		6		8		8		6		4	

Panel Type - Operable Partitions may be faced with standard chalk or back up faces. The above prices shall reflect the use of 40% standard, 50% chalk, and 10% back up. Successful bidders shall give unit prices for variations from these percentages.

Panel Face Material	Cost/sq. ft.
Standard	
Chalk	
Back up	

If mechanical means of operating partitions are offered the unit cost schedule shall be given below. This item will not be figured in the lump sum bid.

*Operable Partitions finished both sides.

°Fill in length as per section 9-9.

XI. ACOUSTIC ABSORPTION

Cost to bring 10'-0" standard panel up to an average absorbtive level of .19 sabines/sq. ft. with acoustic material to be added above 7'-0" $ ________________

The lump sum bid shall include 20,000 lineal feet of panel so modified.

TOTAL COST OF UNIT PRICES - RELATING TO THE LUMP SUM FIGURE:

I. DEMOUNTABLE PARTITIONS - FRAME $______________

II. FIXED PARTITIONS - FRAME $______________

III. 2 HOUR FIXED PARTITIONS $______________

IV. MODIFIED FIXED PARTITIONS $______________

V. SWITCHES $______________

VI. PANEL FACES $______________

VII. DOORS $______________

VIII. JOINTS (ADDITIONAL COST) $______________

IX. ACCESSORY PANEL SYSTEM $______________

X. OPERABLE PARTITIONS - PANEL TYPE $______________

XI. ACOUSTIC ABSORPTION $______________

TOTAL COST $__________________

(TO BE NOT MORE THAN LUMP SUM BID)

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

BIDDING SHEETS: (A) LUMP SUM

CATEGORY 9 - INTERIOR PARTITIONS
ACCORDION TYPE OPERABLE PARTITIONS

In response to the Commission's Invitation to Bid, dated July 18, 1963, the undersigned hereby proposes and agrees to furnish any and all labor, materials, equipment, transportation, and services for the development, testing, supply, and erection of the building components as called for in the Commission's Performance Specifications for Accordion Type Operable Partitions only, Category 9, Interior Partitions, for a total Enclosed Area of 1,400,000 square feet. The undersigned acknowledges that this square footage is an area used as a base for bidding and bonding, that the actual Computed Area of the project schools will be between 1,400,000 and 2,400,000 square feet, and that unit prices derived from this bid are applicable within the above stated range.

The undersigned further agrees to furnish to the Commission by July 1, 1964 unit prices for each component. The unit prices required are set forth by the section of this Contract entitled BIDDING SHEETS: (B) UNIT PRICES.

The undersigned further agrees to furnish by September 1, 1964 detailed drawings indicating the number, size, and physical characteristics of each component.

It is understood that the Accordion Type Operable Partitions covered by this Proposal must be compatible with at least one system for Fixed, Demountable, and Panel type operable partitions. The partitions of this Proposal are compatible with the Fixed, Demountable, and Panel type operable partitions of the bidders listed here:

____

____

____

The undersigned further agrees that his company name shall be listed on the bidding sheets of all bidders named above. It is understood that the Commission will consider partition systems to be compatible only when the names of bidders are mutually listed.

It is further understood (a.) that bids will be awarded only on a composite basis which includes the two partition groupings: (1) Accordion type operable; and (2) Fixed, Demountable, and Panel type operable, and that the bid price to be considered by the Commission will be the sum of the two lump figures from the two compatible groupings and (b.) that if a manufacturer submits bids to cover two groupings, he shall submit a separate price for each grouping on the bidding sheets for that grouping.

For all work called for in the Performance Specifications, Category 9, Interior Partitions, Accordion Type Operable Partitions.

____

________________________________ DOLLARS ($____________________)

____
(Name and quality of bidder)

By ______________________________
(Title of corporate officer or
other individual executing proposal)

Dated __________________, 1963

at __________________________

Bidder's address:

____

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

BIDDING SHEETS: (B) UNIT PRICES

CATEGORY 9 - INTERIOR PARTITIONS
ACCORDION TYPE - OPERABLE

*OPERABLE PARTITIONS - ACCORDION TYPE

anel eight	Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6	
	°		°		°		°		°		°	
	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
0'-0"	6		8		10		10		8		6	
2'-0"	2		2		2		2		2		2	

TOTAL COST TO BE NOT MORE THAN THE LUMP SUM BID $ ________________

°Fill in nominal length of opening to be filled by partition and frame as per section 9-9.

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

July 30, 1963

ADDENDUM NO. 1

The following revisions supersede the information contained in CONTRACT DOCUMENTS AND PERFORMANCE SPECIFICATIONS dated July 1963 and shall become a part thereof.

PART 1. INFORMATION TO BIDDERS

Page 1-3, under LETTER OF INTENT, delete entire paragraph and substitute:

"In order to achieve the desired objective of an integrated system, it is apparent that component proposals must be related. For example, mechanical systems must be related to specific structural configurations. To facilitate this integration of effort, interested manufacturers are required to submit a letter of intent to bid which shall include a statement of the manufacturer's qualifications to do the proposed job, including previous experience in developing components of the general type and category required, and list the names and qualifications of available personnel who will be involved directly in the development work with Project personnel. The letter of intent must be filed with the Commission or postmarked not later than August 1, 1963. Submission of a letter of intent will not create any obligation to bid, but bids will not be accepted from manufacturers who have not submitted such letter of intent.

Inasmuch as bidders, under California law, must possess a contractor's license for the installation of the component or components, a manufacturer may find it necessary to have a separate contracting firm or firms install the component or components and act as the bidder for the project. Therefor, the Commission will accept a letter of intent from a manufacturer whose component systems will be installed by a bidder other than the manufacturer.

The names of all those who submit letters of intent will be promptly furnished to all who have done so. This procedure is being followed to encourage the development of related component proposals."

Page 1-3, under PRELIMINARY PROPOSALS, EVALUATION, FINAL BIDS, first paragraph, delete the third sentence and substitute:

"Within the period from September 2 to September 16, 1963, intending bidders shall submit for evaluation a proposed method of solution."

Page 1-3, under PRELIMINARY PROPOSALS, EVALUATION, FINAL BIDS, second paragraph, delete the second sentence and substitute:

"This will be completed not later than October 14, 1963. The Commission will review proposals in the order of their receipt."

Page 1-3, under PRELIMINARY PROPOSALS, EVALUATION, FINAL BIDS, after the second paragraph add the following:

"The Commission will accept for evaluation only component systems developed by manufacturers who have submitted the required letter of intent. Bids will be accepted only from manufacturers or contractors who are bidding component systems approved at the evaluation stage. Contractors whose bid on a component category includes a component system approved at the evaluation stage need not have submitted a letter of intent, but shall include the name of the system manufacturer when making the bid.

At the time of bidding, the Commission may require the names of suppliers of materials used in the evaluation submission. The Commission will make such requests as it responds to the evaluation submission."

Page 1-3, under PRELIMINARY PROPOSALS, EVALUATION, FINAL BIDS, paragraph three, delete first sentence and add:

"Priced bids shall be submitted by November 14, 1963."

Page 1-4, under PRELIMINARY PROPOSALS, EVALUATION, FINAL BIDS, first paragraph on page 1-4, delete first sentence and substitute:

"On or before December 13, 1963 the lowest responsible bidders will be designated by the Commission and the Commission will advise all bidders promptly of the action taken on bids."

Page 1-5, under SPECIFICATIONS. FORM OF BID, first paragraph on page 1-5, delete first sentence and substitute:

"Bids shall be delivered to the Commission at 750 Welch Road, Palo Alto, California, on or before 4:00 p.m., November 14, 1963."

Page 1-9, under OUTLINE CALENDAR, delete lines 12-17 and substitute:

"September 2-16	1963	Evaluation submission.
October 14	1963	Final date for returning evaluation to manufacturers.
November 14	1963	Final bid submissions, first 4 categories.
December 13	1963	Successful bidders to be nominated.
December	1963	Successful bidders begin working with Project."

PART 3. PROPOSAL

Page 3-1, first paragraph, line 3, delete "October 31, 1963" and substitute:

"November 14, 1963."

PART 4. INFORMATION AND CONDITIONS APPLICABLE TO DEVELOPMENT PHASE OF PROJECT

Page 4-4, under TIME SCHEDULE FOR MOCK-UP BUILDING PROGRAM, second line, delete "November 1963 - " and substitute:

"December, 1963 - "

PART 7. PERFORMANCE SPECIFICATIONS

Page 77-48, line 2 of second paragraph, delete "December 1, 1963" and substitute:

"January 1, 1964"

Page 78-21, line 2 of second paragraph, delete "December 1, 1963" and substitute:

"January 1, 1964"

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

August 13, 1963

ADDENDUM NO. 2

The following revisions supersede the information contained in CONTRACT DOCUMENTS AND PERFORMANCE SPECIFICATIONS dated July 1963 and shall become a part thereof.

PART 1. INFORMATION TO BIDDERS

Page 1-3, after first two lines add:

"A Component Contractor shall advise a school district, before the bids are taken for the general contract, if he regards a specific general contractor to be unsatisfactory, and the reasons shall be given in detail."

PART 7. CATEGORY 6 - STRUCTURE

Page 76-2, section 6-5 GOVERNING REGULATIONS, add the following after last paragraph:

"Following are names of recognized fire testing laboratories or acceptable testing agencies listed in the "Bulletins of Listed Materials and Equipment and Methods of Construction and of Installation of Equipment Conforming to the Fire and Panic Safety Standards", published by the Office of State Fire Marshal, State of California:

1. Underwriters' Laboratories, Inc., with testing facilities at: 207 East Ohio Street, Chicago, Illinois, 2550 Dundee Road, Northbrook, Illinois, 161 Sixth Avenue, New York 13, N. Y., and 1655 Scott Lane, Santa Clara, California.
2. Underwriters' Laboratories of Canada, Box 38, O'Connor Postal Station, Toronto, Ontario, Canada.
3. Factory Mutual Laboratories, Engineering Division, 1151 Boston-Providence Turnpike, Norwood, Massachusetts.
4. American Gas Association Laboratories with facilities at: 1032 East 62nd Street, Cleveland 3, Ohio, and 1425 Grande Vista Avenue, Los Angeles 23, California.
5. Southwest Research Institute, 8500 Culebra Road, Box 2296, San Antonio 6, Texas.
6. Engineering Materials Laboratory, University of California, Berkeley, California.

7. Fire Prevention Research Institute, 19113 South Hamilton Street, Gardena, California.

8. Los Angeles Testing Laboratory, 1300-1308 South Los Angeles Street, Los Angeles, California.

9. Engineering Experiment Station, Ohio State University, Columbus, Ohio.

The Division of Architecture does not recognize quality control laboratories in manufacturer's own plant unless an approved independent testing agent supervises the testing. Local laboratories approved by the Division of Architecture include:

Hales Testing Laboratories, 1139 Howard, San Francisco
Abbott A. Hanks, Inc., 1300 Sansome Street, San Francisco
Robert W. Hunt Co., 500 Iowa, San Francisco
Pittsburgh Testing Laboratory, 651 Howard, San Francisco
Peninsula Testing & Controls, 333 Bayshore Frontage Rd., Mt. View."

Page 76-3, section 6-6, WORK INCLUDED, add the following:

"Fireproofing of the structure with a soffit which can be exposed to the weather (subject to SCSD approval)."

Page 76-7, section 6-15, item C. STAIRWAYS, add the following to the note:

"All stairs will be self supporting. All stairs on the interior of the buildings will be framed within modular dimensions."

Page 76-7, section 6-16, ATTACHMENTS, second paragraph, delete second sentence and substitute:

"Unit prices will be required for attachment of components (such as plumbing lines) which are not part of the integrated sandwich and are not supplied by any other Component Contractor. This component bidder shall provide requirements for a pricing schedule at the final bidding period."

Page 76-7, section 6-16 ATTACHMENTS, third paragraph, delete third paragraph and substitute the following:

"If special inserts, clips or holes are necessary for other components, the cost will be negotiated with the structural Component Contractor, who shall give prices for such inserts, clips, or holes insofar as they do not conflict with his component system. Such cost will be paid for by the Component Contractor needing these parts."

Page 76-10, section 6-16, Item E. ROOF CONSTRUCTION, add the following to the first paragraph:

"The 5'-0" square opening referring to skylights and smoke vents is a nominal dimension. Upon approval by SCSD, structural members which impinge upon the 5'-0" opening of skylights will be acceptable."

Page 76-10, section 6-16, Item E. ROOF CONSTRUCTION, add another paragraph as follows:

"For the number of mechanical openings in the roof larger than 12", coordinate with compatible mechanical bidders."

Page 76-11, section 6-17, ROOFING, INSULATION, AND FLASHING. delete fourth paragraph and substitute:

"The roof assembly shall have a "U" thermal value of 0.15. Insulation may be applied at the location most suitable for a particular mechanical system. If required on the roof deck it shall be supplied and installed by this Component Contractor. This Component Contractor shall coordinate with the mechanical Component Contractor to insure that the composite bid reflects the correct disposition of insulation."

Page 76-25 and 76-26, Roof Boundary Beams with 10' and 5' cantilevers 1 side:

The beams of 25' and 30' beams refer to 25' and 30' spans plus a 10' or 5' overhang.

Page 76-26, ROOF BOUNDARY BEAM - GYM

Change the tributary area from 65 feet to 60 feet.

Page 76-35 ROOFING INSULATION AND FLASHING

Add the following after F.

G. 5'-0" x 5'-0" ROOF OPENINGS FOR SKYLIGHTS AND SMOKE VENTS

180 openings @$____________/opening = $ __________

PART 7. CATEGORY 7 - HEATING, VENTILATING, AND COOLING

Page 77-4, section 7-8, MECHANICAL COOLING

A. delete Music (7-20) and substitute:
"Music (7-23)"

Page 77-5, section 7-9, CONTROL

C. delete this sentence and substitute:

"The control systems shall be the pneumatic, electronic or electric type, or a combination of all three types."

Page 77-5, section 7-10, INSTALLATION, after the first sentence, add the following:

"In-place is defined as equipment mounted, components attached, and power hooked up as required, so that in all respects system is ready to operate."

Page 77-7, section 7-15, ATTACHMENT, second paragraph, delete and substitute the following:

"The following is an extract from the Performance Specifications Category 6 (Structure) Article 6-16:

> Inserts and holes necessary for attachment of components within the integrated sandwich shall be standard. Unit prices will be required for attachment of components, such as plumbing lines, which are not part of the integrated sandwich and are not supplied by any other Component Contractor. This component bidder (structural) shall provide requirements for a pricing schedule at the final bidding period.
>
> If special inserts, clips or holes are necessary for other components, the cost will be negotiated with the structural Component Contractor, who shall give prices for such inserts, clips or holes insofar as they do not conflict with his component system. Such cost will be paid for by the Component Contractor needing these parts."

Page 77-16, section 7-22, PHYSICAL EDUCATION (locker and changing rooms), after e. Acoustic, add new article:

" f. Humidity Control
Supply and exhaust ventilation in shower and locker rooms shall be adequate to maintain humidity below the dew point."

Page 77-17, section 7-23, MUSIC, e. Acoustic, delete this sentence and substitute:

"Permissible background noise level in these spaces shall not exceed NC 30, or an 'A' weighting network reading of 40 db. maximum."

Page 77-22, section 7-29, PERFORMANCE CRITERIA FOR OBJECTIVES, C. 2. d. Odor Control, after second sentence add the following:

"Minimum quantity of outdoor air required to permit reduction from the requirements in paragraph 2a. are as follows:

a) Central station type surface dehumidifier:
5 c.f.m. per person.
b) Activated charcoal air recovery equipment:
2 c.f.m. per person.

All equipment shall be so arranged that 100% of total air supplied by the system can be taken from the outside."

Page 77-22, section 7-29, PERFORMANCE CRITERIA FOR OBJECTIVES, E. Simple and Adequate Control, after first paragraph add the following:

"It is preferable that the occupants of a space do not casually adjust the thermostats."

Also, delete third paragraph and substitute the following:

"In the interests of flexibility, the thermostats may be located as follows: either on demountable or fixed partition service panels, or exposed or concealed on the ceiling of the occupied space, directly accessible from the occupied space or accessible through a hinged or easily removable panel, and capable of being reached from a ladder. If a thermostat inaccessible from the occupied space is used, this Component Contractor shall include some method of remote changing setting in his bid."

APPENDIX 1. BIDDING INSTRUCTIONS

Page 77-36, J. Roof Insulation, delete this paragraph and substitute the following:

"This Component Contractor shall assume a roof assembly with a "U" thermal value of 0.15. Insulation may be applied at the location most suitable for a particular mechanical system and this Component Contractor shall coordinate with the Structural and Lighting-Ceiling contractors to insure that the composite bid reflects the correct disposition of insulation."

Page 77-36, K. Solar Heat Gain Through Glass Walls, change title and whole article to read as follows:

"K. Solar Heat Gain and Heat Loss Through Exterior Glass

1. Architect will design exterior walls to limit solar heat gain through glass to a maximum of 6,000 BTU/hr. allowable through any 200 sq. ft. of wall having any orientation. This area of wall shall be assumed to be the full height of the occupied space.

2. The amount of window area in exterior wall for heat loss calculation will be limited to 25% of the wall area, or 50 sq. ft. in any 200 sq. ft. of wall. This area of wall shall be assumed to be the full height of the occupied space.

3. No consideration need be given at this time to heat loss or heat gain from skylights."

Page 77-38 M. Space and Building Make-Up by Types, Group 7-17 (General Academic), delete heading: "Exterior spaces (refers to space requiring individual control. See below for estimate of number & size of buildings)."

Substitute the following:
"Exterior spaces (refers to space which may require individual control. See below for estimate of number and size of buildings)."

BIDDING SHEETS: LUMP SUM

Page 77-49, 1. SPACE TYPE 7-17 for CONTROL ZONES delete figure 260 and substitute: "310".

PART 7. CATEGORY 8 - LIGHTING-CEILING

Page 78-2, section 8-5 GOVERNING REGULATIONS, add after last paragraph:

"Temporary or provisional test results will be acceptable until final testing can be accomplished. All testing shall be successfully completed by March 1, 1965. Following are names of recognized fire testing laboratories or acceptable testing agencies listed in the "Bulletins of Listed Materials and Equipment and Methods of Construction and of Installation of Equipment Conforming to the Fire and Panic Safety Standards" published by the Office of the State Fire Marshal, State of California:

1. Underwriters' Laboratories, Inc., with testing facilities at: 207 East Ohio Street, Chicago, Illinois 2550 Dundee Road, Northbrook, Illinois, 161 Sixth Avenue, New York 13, N. Y., and 1655 Scott Lane, Santa Clara, California.
2. Underwriters' Laboratories of Canada, Box 38, O'Connor Postal Station, Toronto, Ontario, Canada.
3. Factory Mutual Laboratories, Engineering Division, 1151 Boston-Providence Turnpike, Norwood, Massachusetts.
4. American Gas Association Laboratories with facilities at: 1032 East 62nd Street, Cleveland 3, Ohio, and 1425 Grande Vista Avenue, Los Angeles 23, California.
5. Southwest Research Institute, 8500 Culebra Road, Box 2296, San Antonio 6, Texas.
6. Engineering Materials Laboratory, University of California, Berkeley, California.

7. Fire Prevention Research Institute, 19113 South Hamilton Street, Gardena, California.

8. Los Angeles Testing Laboratory, 1300-1308 South Los Angeles Street, Los Angeles, California.

9. Engineering Experiment Station, Ohio State University, Columbus, Ohio.

Page 78-3, section 8-8, PERFORMANCE TESTING, paragraph E., delete entire sentence and substitute:

"All measurements shall be made with new production lamps from standard stocks."

Page 78-3, section 8-8, PERFORMANCE TESTING, paragraph G., delete entire sentence and substitute:

"Lighting components shall be designed for 277 or 120 volt operation as required."

Page 78-4, section 8-8, PERFORMANCE TESTING, add after last paragraph:

"K. Illumination levels shall be established by averaging readings taken two feet on center in both directions over the entire design room."

Page 78-6, section 8-10, ACADEMIC AREAS, B. General Design Requirements, paragraph 9, delete "installation" and substitute "bidding".

Page 78-8, section 8-10, ACADEMIC AREAS, B. General Design Requirements, paragraph 26, add:

"If a compatible Heating, Ventilating and Cooling system requires insulation as part of the Lighting-Ceiling Assemblies, it shall be furnished and installed by this Component Contractor."

Page 78-8, section 8-10, ACADEMIC AREAS, B. General Design Requirements, paragraph 28, add after the last sentence:

"It shall not require more than eight man hours to remove and relocate 28'-0" of ceiling closure panels using custodial labor.

All closure panels shall be completely reusable, except for those which are cut or altered for passage of services.

One hour rated closure panels shall be provided if necessary to maintain continuity between one hour rated partitions and the structural fireproofing."

APPENDIX 1, BIDDING INSTRUCTIONS

Page 78-17, add after last paragraph:

"J. At time of evaluation submission, intending bidders shall give the total wattage (including ballasts) required for each Assembly in the design room set forth for it."

PART 7. CATEGORY 9 - INTERIOR PARTITIONS

Page 79-1, 9-1 INTRODUCTION, C. Operable Partitions, after last sentence add:

"Accordian partitions are hereby considered as partitions which are not rigid and are not available for use as working surface."

Page 79-5, section 9-9, HORIZONTAL PARTITION MODULE, paragraph D., delete the second paragraph and substitute:

"The individual panels used to make up the panel type operable partition shall be of the same order of size as the fixed and demountable partition panel widths, although they need not be the same sizes. However, the individual operable partition panels shall be of the same size except for the closing panel which may be of a different size. The desired wall lengths and panel widths to be used by the prospective bidders shall be submitted to SCSD at the evaluation period for approval."

Page 79-7, section 9-12, ATTACHMENT OF ACCESSORY OBJECTS, delete the first sentence of the second paragraph and substitute:

"The weight of the objects to be hung will not exceed 60 pounds per lineal foot on each side of the panel, with a maximum moment of 60 foot pounds per lineal foot."

Page 79-8, section 9-14, PARTITION PERFORMANCE CRITERIA, A. Fire and Flame Spread, (3) delete sentence and substitute:

"A one hour rating is not required for operable partitions or their supporting frames."

Page 79-10, section 9-14 PARTITION PERFORMANCE CRITERIA, B. Acoustics, delete paragraph 4. and substitute:

"4. Fixed and demountable solid partitions shall be designed so that acoustic absorbtive material may be added to the partitions above 7'-0" to bring the absorption of the walls up to an average of .19 sabines/sq. ft. If an exposed fibrous material is used to obtain the required absorbtion it shall not show an appreciable loss of acoustical properties when painted with non-bridging paint in accordance with accepted practice. The absorbtive material may be located within the panel, flush with the panel surface or attached to the panel surface. The details shall be developed so that it shall not be possible to see any unfinished edge of the acoustical material. A method for providing this absorbtive function shall be presented to SCSD for review at the evaluation submission."

Page 79-13, section 9-14, PARTITION PERFORMANCE CRITERIA, E. Chalk Panel Surface, (j), delete paragraph on Finish Hardness.

Page 79-20, section 9-18, WEIGHT, INSTALLATION AND REPLACEMENT, 1. Demountable Partitions, delete second sentence and substitute:

"A single panel in the middle of the run shall be replaced in two hours by two custodians if it is in a one hour wall or in one hour if it is in a non-rated wall. A one hour wall 28'-0" long shall be moved from one location to another in sixty-four man hours and in thirty-two man hours for a non-rated wall. The above requirements shall be tested in the mock-up building. Closures above the ceiling plane will be supplied by the Lighting-Ceiling contractor and they will be moved within the time limits described in the Lighting-Ceiling specifications, Category 8, Addendum No. 2."

Page 79-20, section 9-18, WEIGHT, INSTALLATION AND REPLACEMENT, 1. Demountable Partitions, delete next to last sentence and substitute:

"The replacement of seals, tile, moldings, etc., shall be held to a maximum of $1.00/lin. ft. of partition when panels are relocated; this does not include the cost of replacing closures above the ceiling plane."

Page 79-23, section 9-24, OTHER REQUIREMENTS 1. after first sentence insert:

"If the operable wall runs parallel to the structure. limitations on its location so that it may only fall directly beneath a structural member will be acceptable. Operable walls running perpendicular to the structure shall be located at any point on the 4" planning module."

Page 79-23, section 9-24, OTHER REQUIREMENTS 2., after first sentence add:

"The maximum force necessary to move an operable partition shall be twenty-five pounds."

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

September 18, 1963

ADDENDUM NO. 3

The following revisions supersede the information contained in CONTRACT DOCUMENTS AND PERFORMANCE SPECIFICATIONS dated July 1963 and shall become a part thereof.

PART 1. INFORMATION TO BIDDERS

Page 1-8, under IDENTIFICATION OF SUBCONTRACTORS, delete the entire second paragraph and substitute:

"Each bidder shall set forth his subcontractors in accordance with Section 4102, quoted in part above. The subcontractors shall be designated at the time of bid submission, by November 14, 1963."

PART 2. CONSTRUCTION PROGRAM

Under HUNTINGTON BEACH UNION, in the column "Completion 1967" delete the entry. To the column "Completion 1966" add:

"3000 238,200"

Under SAN DIEGUITO UNION, delete "School #2" and substitute"

"San Dieguito High School"

SCHOOL CONSTRUCTION SYSTEMS DEVELOPMENT

Following Part 5, under CONSULTANTS TO PROJECT, add:

Leslie W. Graham	Graham and Hayes Consulting Engineers 171 - 2nd Street San Francisco, California
Clarence E. Rinne	Clarence E. Rinne Structural Engineer 2450 El Camino Real Palo Alto, California

PART 6. GENERAL CONDITIONS

Page 6-23, under IDENTIFICATION OF SUBCONTRACTORS, delete the entire second paragraph and substitute:

"Each Bidder shall set forth his subcontractors in accordance with Section 4102, quoted in part above. The subcontractors shall be designated at the time of bid submission, by November 14, 1963."

Page 6-20, under article 59. DELAYS AND EXTENSION OF TIME, complete the first sentence by adding to line #8 as follows:

"decide to justify the delay, then the time of completion shall be extended for such reasonable time as the District may decide."

Page 6-6, under article 14 SEPARATE CONTRACTS, delete the first sentence and substitute:

"The Board will let other Component Contracts for components not covered by this Contract."

Page 6-7, under article 18, PROGRESS PAYMENTS delete section A and substitute:

"A. The Component Contractor assumes full responsibility for the security and risk of loss from any cause, except loss by fire, of materials stored as stated above, and agrees to replace at his own expense, at the time they are needed for incorporation in the work, any of the said materials that may have become lost, damaged, destroyed, or have otherwise been rendered unsuitable, from any cause, except by fire, for use in the work."

PART 7. PERFORMANCE SPECIFICATIONS

Page 77-3, under article 7-7 DETAILS AND UNIT PRICES, on third line delete "December 1, 1963" and substitute:

"January 1, 1964"

* * * * * * * * * * * * * * * *

NOTE: Any further addenda and Amendments will be sent only to manufacturers who have submitted design proposals for evaluation in accordance with the requirements of the Specifications, except that manufacturers who make a specific request to remain on the mailing list will continue to receive addenda and amendments.

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

October 29, 1963

ADDENDUM NO. 4

The following revisions supersede the information contained in CONTRACT DOCUMENTS AND PERFORMANCE SPECIFICATIONS dated July 1963 and shall become a part thereof.

PART 1. INFORMATION TO BIDDERS

Page 1-3, under PRELIMINARY PROPOSALS, EVALUATION, FINAL BIDS, paragraph three, delete the first sentence and substitute:

> "Priced bids shall be submitted by December 3, 1963."

Page 1-4, under PRELIMINARY PROPOSALS, EVALUATION, FINAL BIDS, first paragraph on page 1-4, delete first sentence and substitute:

> "On or before January 7, 1964 the lowest responsible bidders will be designated by the Commission and the Commission will advise all bidders promptly of the action taken on bids."

Page 1-5, under SPECIFICATIONS, FORM OF BID, first paragraph on page 1-5, delete first sentence and substitute:

> "Bids shall be delivered to the Commission at 750 Welch Road, Palo Alto, California, on or before 4:00 p.m., December 3, 1963."

Page 1-7, under PROPERTY RIGHTS IN SYSTEM, add a second paragraph:

> "It is intended that the Leland Stanford Junior University hold rights in the work only as a complete system. The successful bidder will hold full title to any existing patents or patentable inventions which may be a part of the building components described in his bid. The successful bidder will not be restricted in the use of the component or component parts except as stated in the preceding paragraph."

Page 1-9, under OUTLINE CALENDAR, delete lines 15-19, and substitute:

"December 3,	1963	Final bud submissions, first 4 categories.
January 7,	1964	Successful bidders to be nominated.
January	1964	Successful bidders begin working with Project."

* * * * * * * *

Note: Bid bond forms are enclosed with this addendum. Copies of the following forms will be mailed in a few days: Proposal, Bidding Sheets (Lump Sum).

* * * * * * *

PART 6. GENERAL CONDITIONS

Page 6-9, under 21, CHANGES IN THE WORK, delete the first line on page 6-9 and substitute:

> "the Contract Sum being adjusted accordingly. All such work shall be first reviewed by the General Contractor and shall then be . . . ."

Page 6-16, under 42, PATENT RIGHTS, COPYRIGHTS, TRADE NAMES AND ROYALTIES, line 4, delete the words:

> ". . . . or their application . . . ."

PART 7. PERFORMANCE SPECIFICATIONS
CATEGORY 6 - STRUCTURE

Page 76-4, CORROSION RESISTANCE, add the following paragraph:

> "All metal deck used shall be a minimum of 24 gauge. It shall be the structural bidders responsibility to keep all surfaces of metal deck free from deterioration (such as rust) until it is closed in or covered."

Page 76-4, EXPANSION AND CONTRACTION, add the following new paragraph:

> "All concrete manufacturers shall provide a waiting period for creep on precast members of 90 days for gymnasium spans and 60 days for all other spans."

Page 76-11, 6-17 ROOFING, INSULATION AND FLASHING, second paragraph, third line:

> ". . . . which shall bond the manufacturer . . . ."

shall be changed to read:

> ". . . . which shall bond the roofing manufacturer . . . ."

Page 76-25, ROOF BOUNDARY BEAMS WITH NO CANTILEVER, 25' beam tributary area 30 feet, 3425 L.F. or 133 units, change:

> "133 units" to "137 units".

Page 76-3, 6-8 SPECIAL CONDITIONS, add the following paragraph after the first paragraph of this section:

> "Structural bidders may omit fireproofing for 25% of the structure and may adjust bidding sheets accordingly. If this is done, and when unit prices are required, such unit prices shall include prices of items with fireproofing and prices of items without fireproofing, except where the structure inherently provides fireproofing. (If, however, a ceiling provides the fireproofing, then two unit prices will not be required except for columns).

CATEGORY 6 - STRUCTURE

If bidder wishes to design primary beams for their most economical spacing, he may do so using the following alternate proposals. The percentage breakdown for different tributary areas will be in the same relationship as the present bidding sheet.

Present Schedule

Roof Boundary Beams W/No Cantilever	Roof Interior Beams W/No Cantilever
12% of 10'	8% of 10'
22% of 15'	23% of 15'
22% of 20'	23% of 20'
22% of 25'	23% of 25'
22% of 30'	23% of 30'

Alternate I

27% of 10'	18% of 10'
17% of 15'	20% of 15'
17% of 20'	20% of 20'
17% of 25'	20% of 25'
22% of 30'	22% of 30'

Bidder shall add 50 columns to 10' column height w/T.A. of 2250 sq. ft.

Bidder shall add 110 columns to 10' column height w/T.A. of 1200 sq. ft.

Alternate II

7% of 10'	7% of 10'
51% of 15'	51% of 15'
10% of 20'	10% of 20'
10% of 25'	10% of 25'
22% of 30'	22% of 30'

Bidder shall add 60 columns to 10' column height w/T.A. of 2250 sq. ft.

Bidder shall add 110 columns to 10' column height w/T.A. of 1200 sq. ft.

Alternate III

7% of 10'	7% of 10'
7% of 15'	7% of 15'
54% of 20'	54% of 20'
10% of 25'	10% of 25'
22% of 30'	22% of 30'

Bidder shall add 15 columns to 10' column height w/T.A. of 2250 sq. ft.

Bidder shall add 15 columns to 10' column height w/T.A. of 1200 sq. ft.

CATEGORY 6 - STRUCTURE

Roof Boundary Beams W/No Cantilever	Roof Interior Beams W/No Cantilever

Alternate IV

7% of 10'	7% of 10'
7% of 15'	7% of 15'
7% of 20'	7% of 20'
57% of 25'	57% of 25'
22% of 30'	22% of 30'

Bidder may deduct 100 columns from 10' column height w/T.A. of 2250 sq. ft.

Bidder may deduct 80 columns from 10' column height w/T.A. of 1200 sq. ft.

Bidder may deduct 50 columns from 10' column height w/T.A. of 2250 sq. ft.

Bidder may deduct 40 columns from 10' column height w/T.A. of 1200 sq. ft.

Alternate V

7% of 10'	7% of 10'
7% of 15'	7% of 15'
7% of 20'	7% of 20'
7% of 25'	7% of 25'
72% of 30'	72% of 30'

Bidder may deduct 180 columns from 10' column height w/T.A. of 2250 sq. ft.

Bidder may deduct 120 columns from 10' column height w/T.A. of 1200 sq. ft.

Bidder may deduct 84 columns from 10' column height w/T.A. of 2250 sq. ft.

Bidder may deduct 56 columns from 10' column height w/T.A. of 1200 sq. ft.

Roof Boundary Beam for Gym

Present Schedule

50% of 15'
50% of 20'

Alternate VI

50% of 20' 50% of 25'	Bidder may deduct 22 columns from 25' column height w/T.A. of 1200 sq. ft.

Alternate VII

50% of 20' 50% of 30'	Bidder may deduct 30 columns from 25' column height w/T.A. of 1200 sq. ft. However, column T.A. of 1200 sq. ft. shall change to 1650 sq. ft.

CATEGORY 6 - STRUCTURE

Alternate VIII

50% of 25' 50% of 30'	Bidder may deduct 36 columns from 25' column height w/T.A. of 1200 sq. ft. However, column T.A. of 1200 sq. ft. shall change to 1650 sq. ft.

Roof Interior Beams with 5' or 10' Cantilever Each Side

Bidder has the option to use 30' beams in lieu of 25'

Page 77-6, 7-12 MAINTENANCE, omit both paragraphs of this section and substitute the following:

"Component Contractor shall include in his lump sum bid the cost of a five-year maintenance contract, including parts and labor, for all portions of the mechanical system within his contract.

The figure used in the bid shall represent the contract recommended by the Component Contractor for the systems he is offering, and the terms of this maintenance shall be called out by the Component Contractor. Items to be performed by school custodial staff shall be called out, and not included in the Component Contractor's maintenance contract. Statement of terms should include items serviced, type of service, and frequency of service.

In addition to the specific figure used by the Component Contractor for his bid he may make suggestions as to other items which he would offer, and also he may indicate a figure, or a percentage increase to illustrate a contract over a longer term in five year intervals up to 20 years.

The Component Contractor shall also provide in his bid a deduction for a contract based on a normal one year warranty and no maintenance.

It will be at the option of the individual school district to contract for the five-year maintenance contract before the time that the building is accepted.

The intent of this arrangement is to enable maintenance cost to become a factor in awarding a component contract, but without the school district being irrevocably burdened with this cost. Since maintenance cost comes from the district's own operating budget, and not from the State-aid allowance, it is felt that the maintenance contract should remain at the district's option. It is realized that the maintenance contract as required here gives a partial representation only of the total maintenance cost of a system, and the project staff and its consultants will exercise their judgment and experience in trying to weigh all the complex factors involved. An independent analysis of maintenance costs of each system will be made by this group when bids are received."

Page 77-2, 7-4 SCOPE, add the following paragraphs:

"This category shall include all starters, motors, control and wiring.

CATEGORY 7 - HEATING, VENTILATING AND COOLING

Definition of Electrical Control Wiring: All wiring, including line and low voltage wiring and conduit for control and interlock between power source, sensing and controlling elements; except line voltage distribution to power panels, motor starters, and mechanical equipment.

Electrical Work not included in this category:

A. Service entrance equipment and metering facilities.

B. Power distribution system including switchboards, panelboards, distribution transformers if necessary, feeders and branch circuit wiring.

C. Branch circuit wiring for lighting of classrooms shall terminate in a junction box within the classroom area and be arranged for extension of circuits to lighting fixtures. This extension to be done under Category 8 - Lighting-Ceiling.

Motor starters shall be furnished by this Component Contractor and will be installed and power wiring connected thereto under the Electrical Division of the Work. Control wiring will be included by this Component Contractor.

Electrical power requirements are to be coordinated with the mechanical systems to be considered."

Page 77-16, 7-22 PHYSICAL EDUCATION (locker & changing Rooms), a. Use, omit second paragraph and substitute:

"Adequate ventilation to lockers shall be provided. Provide exhaust capacity of 25 c.f.m. per locker at points in floor slab or ceiling suitable for connection to lockers as required. Assume one locker per student, and 150 students per locker room."

Page 77-17, FOOD SERVICE (kitchen type space), add the following:

"This Component Contractor shall provide for a supply of 2 c.f.m./sq.ft. minimum. Exhaust fans and ductwork for exhausting hoods, etc. will be supplied by others as will hoods, etc."

Page 77-18, 7-26 MISCELLANEOUS SPACES, add the following:

"Toilet rooms: not supplied but exhaust only. Assume 12 air changes/hr. Assume a ceiling height of ten feet. Assume the following toilet sizes and quantities.

Area	Quantity
80 sq. ft.	142
240 sq. ft.	88
	230 Total

CATEGORY 7 - HEATING, VENTILATING AND COOLING

Page 77-49, BIDDING SHEETS: LUMP SUM

It will be noted that the number of control zones called for in the sub-system breakdown does not agree with the number of spaces in Section M, Space and Building Make-Up by Types. This discrepancy occurs because many spaces are assumed to have similar zoning. Bidders should figure on the number of zones called for on the bidding sheets.

Part I General Evaluation Report, item 6, Operating Costs,

Add the following supplementary information:

1. Orientation of Building Plan "A" - long axis north-south, with North at the end where four small classrooms are located.
2. Design wet-bulb - use 72° F corresponding to previously selected D.B. of 100° F.
3. The glass area will be determined by the specifications not by scaling from plan of Building "A".
4. Ignore the solar effect as far as heating cycle is concerned for these calculations.

General:

The intent of these calculations is to derive figures with which potential operating costs of systems can be compared. It is not intended that these operating cost figures will be regarded as an actual operating cost figure, or quoted in any way as such. The reviewing group will endeavor to take into account factors which do not show in the relatively crude figures which will result from the assumptions made.

PART 7. PERFORMANCE SPECIFICATIONS
CATEGORY 8 - LIGHTING-CEILING

Page 78-2, section 8-6 WORK INCLUDED, paragraph G., delete entire sentence.

Page 78-6, section 8-10 ACADEMIC AREAS, B. General Design Requirements, paragraph 7., add after the last sentence:

> "Brightness limitations in Section 8-10 B, paragraphs 3, 4, 5, and 6 are related to the maintained illumination level. To obtain the initial brightness limitations, these quantities may be increased by application of the maintenance factor given for each Assembly."

Page 78-6, Section 8-10 ACADEMIC AREAS, B. General Design Requirements, delete paragraph 10 and substitute:

> "10. Light control elements which are allowed by code to have a Class III flame spread index shall not show a yellowness increase of more than 15 IES-NEMA-SPI units after 500 hours of exposure in an Atlas FDAR Fadeometer in accordance with ASTM E-42-57. Light control elements which are required by code to have a Class I flame spread index shall not show a yellowness increase of more than 15 IES-NEMA-SPI units after 2000 hours of exposure to two 40 watt T-12 Westinghouse fluorescent sunlamps in a standard reflecting fixture with the surface of the lamps 4" from the surface of the plastic to be tested. Measurements shall be made in accordance with ASTM D791-61T."

Page 78-7, Section 8-10 ACADEMIC AREAS, B. General Design Requirements, paragraph 22, add after the last sentence:

> "The ceiling system shall be capable of receiving and transmitting to the structure a horizontal partition load of 5 pounds per square foot from interior partitions located on any 4" x 4" module."

Page 78-8, Section 8-10 ACADEMIC AREAS, B. General Design Requirements, paragraph 27, add after the last sentence:

> "If plenum subdivisions are required by a compatible mechanical system, they shall be furnished by this Lighting-Ceiling Contractor."

Page 78-9, Section 8-10 ACADEMIC AREAS, B. General Design Requirements, delete paragraph 36 and substitute:

> "36. Light control elements shall have a flame spread index conforming to the California State Fire Marshal, Title 19, California Administrative Code."

CATEGORY 8 - LIGHTING-CEILING

Page 78-11, section 8-15 ASSEMBLY Cl - ACADEMIC, add after last paragraph:

"6. Light control elements shall be located in not more than 18 of the 30 whole modules in the test room described in section 8-10A, and may entirely fill these modules."

Page 78-13, section 8-17, ASSEMBLY D - CORRIDOR, B. Design Requirements, delete paragraph 9 and substitute:

"9. Light control elements shall have a flame spread index conforming to the California State Fire Marshal, Title 19, California Administrative Code."

Page 78-15, section 8-19 ACCESSORY ITEMS, B. High Humidity Ceiling Panels, add after last paragraph:

"5. The suspension system for high humidity panels shall have the same details as the suspension system for the standard Assemblies, and shall have the same moisture resistance properties as the high humidity panels."

Page 78-15, section 8-19 ACCESSORY ITEMS, C. Furred Ceiling Return, delete paragraph 1 and substitute:

"1. Ceiling returns shall be of the same color as the standard ceiling panels of the Academic Assemblies."

Page 78-16, APPENDIX 1, BIDDING INSTRUCTIONS, paragraph D, add after the last sentence:

"Quantities of Lighting-Ceiling items which are pertinent to other categories (i.e., linear diffusers, etc.) shall be verified by the appropriate compatible bidder as being those quantities necessary to properly serve the Design Conditions rooms."

PART 7. PERFORMANCE SPECIFICATIONS
CATEGORY 9 - INTERIOR PARTITIONS

Page 79-8, under 9-13 PANEL FACES AND FINISHES, add:

"Paint finish specification for field painting:

1. Film Thickness

   Finish paint shall have a minimum dry film thickness of 1.0 mil. Minimum air drying period prior to testing - 2 weeks.

2. Resistance to Dry Rub

   After 100 cycles on Gardner Model Washability and Abrasion Machine, using cheese cloth over felt pad, there shall be no appreciable change in gloss as measured by Gardners 60 degree Glossmeter.

3. Accelerated Weathering

   One hundred (100) hours exposure in a National Carbon Company-X Weathering Machine, with no appreciable color or gloss change (slight dulling of surface permitted.)

4. Humidity Resistance

   Four hundred (400) hours in atmosphere with 100% humidity and temperature of 100 degrees F. with no appreciable deterioration.

5. Washability

   100,000 brush strokes per mil of dry film thickness, while immersed in a 5% solution of trisodium phosphate in a Gardner Straight Line Washability Machine (Model 105), without softening or more than slight abrading of the surface.

6. Repair of Surface

   Marks due to cutting or scratching in the field shall be repairable in the field by the custodial staff, so that the repair does not detract from the general appearance.

7. Ultra-Violet Resistance

   There shall be no appreciable color change after 150 hours in the Atlas Fadeometer.

8. Light and Darkness Color Uniformity

   A panel half covered by aluminum foil and placed in diffused daylight for one week shall show no unrecoverable color change between the covered and uncovered areas.

CATEGORY 9 - INTERIOR PARTITIONS

Page 79-10, B. Acoustics, add:

"8. Minor variations in the required noise reduction factor contour are permissible as approved by SCSD. Requests for variations shall be accompanied by test data. For submittal purposes Geiger and Hamme Laboratories two-room sound attenuation test data will be acceptable as an indication of the partition performance."

Page 79-11, D. Abrasion Resistance, delete paragraph 3. and paragraph 4., and substitute:

"3. Vinyl wall coverings shall be in accord with Federal Specification CCC-W-408, Type II Class I."

Page 79-15, SAMPLE RANGE OF 35 COLORS (MUNSELL DESIGNATION) delete entire page, and substitute:

SAMPLE RANGE OF COLORS (TAKEN FROM MARTIN SENOUR)

PANELS A & C	PANEL B	PANEL F	PANEL G	PANEL H
(1) 16 R 40	(5) 19 R 55	(9) 16 R 27	(10) 22 R 194	(16) 24 R 147
(2) 17 R 45	(6) 17 R 76	(1) 16 R 40	(11) 24 R 184	(17) 24 R 65
(3) 13 R 07	(7) 17 R 75	(2) 17 R 45	(12) 22 R 98	(18) 24 R 185
(4) 10 R 17	(8) 19 R 41		(13) 24 R 143	(9) 16 R 27
			(14) 24 R 201	(1) 16 R 40
			(15) Bronze green (House & Garden 1962)	(2) 17 R 45

EXTENDED GROUP A AND/OR C PANELS

(19) White
(20) 24 R 33
(21) 24 R 102
(22) 24 R 230
(23) 24 R 97
(24) 24 R 225
(25) 24 R 65
(26) 22 R 85
(27) 22 R 202
(28) 24 R 177
(29) 24 R 153
(30) 24 R 137
(31) 24 R 129
(32) Additional Red to be added
(33) Additional Brown to be added

Delete pages 79-25, 79-26, 79-40, and 79-41, BIDDING SHEETS: (A) LUMP SUM. They have been changed to permit a separate bid to be taken for the panel-type operable partition. New bidding sheets will be supplied:

1. FIXED AND DEMOUNTABLE PARTITIONS
2. PANEL TYPE OPERABLE PARTITIONS
3. ACCORDION TYPE OPERABLE PARTITIONS

PART 7. PERFORMANCE SPECIFICATIONS

Page 79-28, UNIT PRICES, section C, delete the first sentence and substitute:

> "Panels type 1, 2, 6, and 7 shall be divided equally between 1 hour and no hour requirements."

Page 79-30, I. DEMOUNTABLE PARTITIONS 44,000 LINEAL FEET.

The quantity of partition panels which contain glass is reduced as follows:

Height & Type	% Use
1.	from 68% to 69-1/2%
2.	no change
3.	from 2% to 1-1/4%
4.	from 1-3/4% to 1-1/4%
5.	from 1-1/4% to 1%
6.	from 20% to 20-1/2%
7.	no change
8.	from 1% to 1/2%
9.	no change
10.	no change

Page 79-31, II. FIXED PARTITIONS 32,000 LINEAL FEET.

Change quantities as follows:

Height & Type	% Use
1.	from 66% to 67-1/2%
2.	no change
3.	from 2% to 1-1/4%
4.	from 1-3/4% to 1-1/4%
5.	from 1-1/4% to 1%
6.	from 18% to 18-1/2%
7.	no change
8.	from 1 to 1/2%
9.	no change
10.	no change

Page 79-35, VI. DEMOUNTABLE AND FIXED PARTITIONS 132,000 LINEAL FEET (continued)

Change quantities as follows:

Height & Type	% Use
9'-0" standard	no change
7'-0" standard	from 1-3/4% to 1-1/2%
7'-0" chalk	from 1-1/2% to 1-1/4%
7'-0" tack	no change
5'-0" standard	from 2-3/4% to 2%
3'-0" standard	from 2-1/4% to 1-3/4%
1'-0" standard	from 1% to 3/4%
PART SOLID PANELS	from 12% to 10%
3'-0" wire glass	no change
3'-0" glass	no change
5'-0" wire glass	from 1-1/2% to 0%
5'-0" glass	from 1-1/2% to 1-3/4%
7'-0" glass	from 2-1/4% to 1-3/4%
9'-0" glass	from 1-3/4% to 1-1/2%
PART GLASS PANELS	from 12% to 10%

In line with the above changes the EXAMPLE sheet has been changed to conform and is attached for your information.

Page 79-39, delete the line "X. OPERABLE PARTITIONS - PANEL TYPE and change the "XI" TO "X".

EXAMPLE

DEMOUNTABLE PARTITIONS 44,000 LINEAL FEET

Panel Frame

Height & Type	% Use	PANEL WIDTHS SELECTED ACCORDING TO PLAN A, B, C, E, OR F												Service Panel Most Used Panel Size	
		Panel 1		Panel 2		Panel 3		Panel 4		Panel 5		Panel 6			
		24" (20%)		36" (16%)		40" (16%)		48" (48%)							
		Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price	Quan.	Price
1. Solid	69-1/2	1530 1530		816 816		740 740		1835 1836						360	
2. Glass 7'-0" to 10'-0"	3-1/2	77 77		41 40		37 38		92 93						-	
3. Glass 5'-0" to 10'-0"	1-1/4	55		29		29		66						-	
4. Glass 3'-0" to 10'-0"	1-1/4	55		29		29		66						-	
5. Glass 1'-0" to 10'-0"	1	44		24		22		53						-	
12'-0"															
6. Solid	20-1/2	450 450		240 240		218 219		541 541						90	
7. Glass 9'-0" to 12'-0"	1-1/2	33 33		17 18		16 16		39 40						-	
8. Glass 7'-0" to 12'-0"	1/2	22		12		11		26						-	
9. Glass 5'-0" to 12'-0"	1/2	22		12		11		26						-	
10. Glass 3'-0" to 12'-0"	1/2	22		12		11		26						-	

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

November 20, 1963

ADDENDUM NO. 5

The following revisions supersede the information contained in CONTRACT DOCUMENTS AND PERFORMANCE SPECIFICATIONS dated July 1963, and shall become a part thereof.

PART 2: CONSTRUCTION PROGRAM

Under SACRAMENTO CITY UNIFIED, in the column "Completion 1966" delete the entry. To the column "Completion 1967" add:

"2000 172,000"

NOTICE TO CONTRACTORS (following page 5-3 of the CONTRACT DOCUMENTS)

Page 3. Delete section #3 and substitute:

"Bids shall be sealed and delivered to the office of the Commission on or before 4:00 p.m., December 3, 1963, and will be opened in public at or about 4:30 p.m. of that day in Room 2 of Cubberly Hall, School of Education, Stanford University, Palo Alto, California."

PART 7. PERFORMANCE SPECIFICATIONS

CATEGORY 6 - STRUCTURE

Page 76-3, section 6-6, WORK INCLUDED, as a point of clarification, all anchor bolts are to be furnished by the structural component contractor.

Refer to Addendum No. 2, page 2:
Page 76-3, section 6-6, WORK INCLUDED, delete the following:

"Fireproofing of structure with a soffit which can be exposed to the weather (subject to SCSD approval)."

Replace above item with the following:

"Bidders shall not include the price of a fireproofed exterior soffit in their lump sum bid price; however, they shall provide unit prices for such a soffit. For purposes of bidding, it shall be assumed that there will be 25,000 square feet of exterior fireproofed soffit. If no soffit occurs, all structural members shall be fireproofed at the building exterior."

Refer to Page 5 of Addendum No. 4

Alternate IV
Bidder may deduct 50 columns from 10' column height, and 40 columns from 10' column height.

Alternate V
Bidder may deduct 84 colums from 10' column height and 56 from 10' column height.

Change all of the above 10' column heights to 12' column heights.

Page 76-3, section 6-9, STOCKPILING, add the following:

> "Costs of this inspection will be paid for by the school districts after the general construction contract between the school district and general contractor has been signed. Component Contractors shall keep an accurate cost of all inspection for stockpiled items so that they may be allocated properly to the different school districts. If tests show that specifications are not met, Component Contractor shall pay for such testing and extra work as is necessary until satisfactory results are obtained."

Page 76-7, section 6-15, LOADING

A. Roof Loading

Dead load - a. assume 5#/S.F. plus structure, roofing and insulation.

As a point of clarification, the 5#/S.F. includes ceiling and suspension system, lighting, and mechanical service lines (such as gas, water, etc.)

B. Floor Loading

Dead load - assume 26#/S.F. plus structure.

As a point of clarification, the 26#/S.F. includes ceiling and suspension system, lighting, and mechanical service lines (such as gas, water, etc.) and 20#/S.F. for movable partitions.

If compatible bidders require smaller dead load than assumed, the structural component bidder may take advantage of this. If compatible bidders require larger dead load than assumed, the structural component bidder shall be responsible to provide for such loading in the structure.

Page 76-3, section 6-10, STRUCTURAL CALCULATIONS

Preliminary calculations are not required at the final bid submission, but shall be available if requested by SCSD. If calculations are presented, they will be beneficial to SCSD and the Division of Architecture in reviewing the design approach and any assumptions made.

CATEGORY 7 - HEATING, VENTILATING AND COOLING, Bidding Sheets: Lump Sum-Page 1, second paragraph, second line, change date of January 1, 1964 to:

"February 15, 1964".

CATEGORY 8 - LIGHTING - CEILING

Page 78-6, section 8-10, ACADEMIC AREAS, B. General Design Requirements, paragraph 7, add after the last sentence:

> "Due to the limited size of the test room, brightnesses of the lighting-ceiling assemblies at the higher angles (75° - 85°) cannot be measured from 48" off the floor. Measurements at these angles shall be made by raising the meter as necessary to intercept the lighting-ceiling devices at a distance of not more than 27' - 0"."

Page 78-8- Section 8-10, ACADEMIC AREAS, B. General Design Requirements, paragraph 30, add after the last sentence:

> "The furred ceiling is not required to support interior partitions, but shall be able to accept Assembly D.corridor lighting."

Page 78-10, Section 8-10, ACADEMIC AREAS, B. General Design Requirements, delete paragraph 38b. and add:

> "b. Academic Lighting-Ceiling Assemblies A2, B2 and C2 shall contribute (within the Design Conditions, Section 8-10A) a minimum absorption of 110 sabines and a maximum absorption of 125 sabines at 500 cycles per second."

Page 78-12, Section 8-17, ASSEMBLY D-CORRIDOR, a.Design Conditions, delete paragraph 4 and add:

> "4. Wall Construction:
> One-hour rated demountable partitions on four sides."

Page 78-12, Section 8-18, ASSEMBLY D - CORRIDOR, B.Design Requirements, add after the last paragraph:

> "10. The Assembly shall include all devices necessary to provide one-hour protection for the corridor, as required by code."

Page 78-17, APPENDIX 1, BIDDING INSTRUCTIONS, add after last paragraph:

> "j. Certain portions of the project schools will not require fire rated construction because of the area and configuration of the buildings. In the Bidding Sheets, the area served by the Lighting-Ceiling Assemblies has been divided into two portions:
>
> (1) The area where the Assemblies must provide fireproofing if required by a compatible structural system, and
>
> (2) The area where the Assemblies are not required to provide fireproofing."

Page 78-19, APPENDIX 3, DESIGN CONDITIONS ROOM DIAGRAMS, A. Academic Assemblies, refer to the room diagram and note:

> The interior face of the exterior wall shall be considered to be two (2) inches inside the center line shown in the diagram.

Page 78-20, APPENDIX 3, DESIGN CONDITIONS ROOM DIAGRAMS, C. Gymnasium Assembly, refer to the diagram and note:

> Electrical service for gymnasium lighting will be available at one point in the Design Condition Room. Electrical distribution from this point to the various fixtures shall be included as a part of the Gymnasium Assembly. Location of the point is at the option of the bidder.

CATEGORY 9 - INTERIOR PARTITIONS

9-19 DOORS

1. Demountable and Fixed Partitions, delete the fourth paragraph and substitute:

> "Solid Core Banded Hardwood Doors - Good Grade, Type II per Commercial Standard CS171-58, U.S. Department of Commerce, as reprinted June, 1962, with amendments and per page 273, Bulletin of Listed Building Materials, California State Fire Marshal."
>
> Hollow Metal Doors - NAVDOCKS Specification 32Y b, June, 1961, Plus Addendum No. 1, December, 1961.

9-20 HARDWARE

1. Demountable and Fixed Partitions, under a. delete "Series 16" and substitute "Series 161".

9-24 OTHER REQUIREMENTS - Paragraph #4, between the second and third sentence insert:

> "This guarantee shall not apply if the equipment has been subjected to misuse, negligence or has been tampered with or altered in any way after accepted installation."

BIDDING SHEETS: (B) UNIT PRICES, CATEGORY 9 - INTERIOR PARTITIONS.

VI. DEMOUNTABLE AND FIXED PARTITIONS, pages 79-34 and 79-35 delete "132,000 Lineal Feet" and substitute "152,000 Lineal Feet", and page 79-36

VII. DOOR TYPES, Section 9-19 add:

> "Doors and Frames for Demountable and Fixed Partitions hereinafter listed are in addition to Panel Frames listed in Tables I and II, pages 79-30, 79-31 and 79-32".

79-37 IX ACCESSORY PANEL SYSTEM
The quantities of 2000 and 1400 refer to the number of 4'-0" x 4' - 0" chalk and tack panels to be supplied. Panels of 4' - 0" x 8' - 0" in size may be substituted for half of the 4' - 0" x 4' - 0" panels.

* *

SPECIAL NOTES:

1. The lump sum bid should be accompanied by sufficient detailed information about the component category to describe fully the nature and extent of all items and work covered in the bid in order to permit final evaluation. In general, the information should include material similar to that of the evaluation submission together with any changes made in response to the evaluation. If it is feasible to describe separately all changes in the material of the evaluation submission, then the original proposals need not be re-submitted. However, it should then be stated in the bid that the evaluation submission material is incorporated in the bid. At least two copies of the detailed information are to be submitted with the bid, and eight additional copies are required by December 10.

2. Enclosed is a copy of the preliminary drawing of the Project mock-up building.

Floor area	4200 sq. ft. enclosed area
Roof area	6300 sq. ft.
Ceiling height	10' - 0"

The additional floor area shown in the outline in the plan will be built by Stanford University and is not included in the mock-up building program of the Project. The manufacturers' commitment for the building extends only to the shaded area in the plan.

3. Bids shall be delivered to the office of the Commission, Room 322, 750 Welch Road, Palo Alto on or before 4:00 p.m., December 3, 1963, as specified. However, a nearby location will be used for the opening of bids in order to provide more appropriate facilities. Bids will be opened in public at or about 4:30 p.m. on December 3 at Room 2, Cubberley Hall, School of Education, Stanford University. A map will be provided within the next few days.

4. The Project would find it desirable to be able to publish in various reports or articles any of the material contained in the bids. Manufacturers or bidders shall inform the Commission if they have any reservations about publication of material.

November 26, 1963

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

ADDENDUM NO. 6

A number of questions have been raised as to the interpretation of the Contract Documents and Performance Specifications and the Joint Powers Agreement among the participating School Districts. Reviewing these questions has brought out that there are minor internal inconsistencies in the contract documents and also that in some details the general conditions are inconsistent with usual practice. Accordingly, it has been considered desirable to publish the following interpretations and amendments of the contract documents, which it is hoped will serve to clarify but work no substantial change in the contract documents.

INTERPRETATIONS

1. Recognizing that many interested manufacturers may not be licensed contractors in California, the Commission agreed in Addendum No. 1 to accept letters of intent from manufacturers whose component systems would be installed by bidders other than themselves. A question has arisen as to whether a manufacturer who has filed a letter of intent pursuant to this permission but who will not bid will be required to post a bid bond or, if his system is included in a successful bid, a performance bond for the development phase of the program. It is the Commission's view that the bonding requirements apply only to actual bidders.

2. We have had several inquiries concerning the last paragraph of numbered Paragraph 7 of the Joint Powers Agreement. This Agreement, of course, is not part of the contract documents and performance specifications. However, it is the view of the Commission that it is the intent of the Agreement to provide that in the event a school district does not wish to incorporate all the features of any particular component developed for the Project, such as more expensive types of lighting or air conditioning, it will not be necessary for the school district to incorporate in the design or utilize in the construction of its schools such features. However, it is contemplated that in the event any school included in the program (see Part 2 of the Contract Documents) is constructed by any member school district within the time period set forth in the contract documents, such school will utilize the components developed pursuant to the Project insofar as the building utilizes any component or part thereof of a type developed by the successful bidders. Member districts will be asked to amend the last clause of paragraph 7 to make it read: "but no School District shall be obligated to incorporate or include in its design or construction of a school building all features of any component developed pursuant to or contemplated by this agreement."

3. The component contract requires in Paragraph 4 thereof that the component contractor agrees to work under the supervision of the general contractor for each **school**. It has been pointed out that the contract with the general contractor must require him to undertake such supervision. It is the view of the Commission, also, that appropriate provisions to this effect must be included in the form of general contract to be used by each individual school district. An effort will be made to work out satisfactory provisions to this effect with the successful bidders soon after they have been designated and to obtain the incorporation of such provisions in the general conditions to be employed by the individual school districts in their general contracts.

4. Reasonableness is necessarily implied in provisions of Part 6, General Conditions, such as paragraph 3, EXAMINATION OF PREMISES, paragraph 11, DISTRICT'S RIGHT TO TERMINATE CONTRACT, paragraph 20c, PAYMENTS WITHHELD, and in paragraph 46, CARE OF PRESENT BUILDINGS AND SITE, it is not intended to hold contractors liable for matters which are not their fault.

AMENDMENTS

PART 1. INFORMATION TO BIDDERS.

Part 1-4, under SPECIFICATIONS, FORM OF BID, the last sentence of the second paragraph is amended to read:

"The location of each of the school sites is listed herein, and lack of familiarity with conditions at the building sites will not be considered as an excuse for failure of performance."

The third paragraph is amended to read as follows:

"Bidders are expressly notified that no deviation from the specifications will be allowed except minor changes in component details which may be required as a result of testing during the development phase of the Project and then only with the approval of the Project's Architect."

Page 1-7, the third paragraph from the top of the page is amended to read as follows:

"Bids shall be delivered to the office of the Commission, Room322, 750 Welch Road, Palo Alto on or before 4.00 P.M., December 3, 1963, as specified. Bids will be opened in public at or about 4.30 P.M. on December 3 at Room 2, Cubberley Hall, School of Education, Stanford."

PART 4. INFORMATION AND CONDITIONS APPLICABLE TO DEVELOPMENT PHASE OF PROJECT.

Page 4-1, under GENERAL INFORMATION, the last paragraph is amended to read as follows:

"During the development phase of the Project, all questions in regard to the interpretation of the scope or meaning of the specifications shall be referred to the Project's Architect, whose decision thereon shall be final unless revised by arbitration pursuant to the rules of the American Institute of Architects."

Page 4-2, under TIME FOR COMPLETION - LIQUIDATED DAMAGES, the last paragraph is amended to read as follows:

"Within ten days from the beginning of any such delay, the component contractor shall notify the Project's Architect in writing of the cause of the delay and, after ascertaining the facts and the extent of the delay, he shall extend the time for completing development work when in his judgment the facts justify such extension.The decision of the Project's Architect shall be subject to revision by arbitration in accordance with the rules of the American Institute of Architects."

Page 4-2, under COSTS OF DEVELOPMENT WORK, add the following to the second paragraph:

"Payments to the general contractor for the mock-up building shall be made only upon the certificate of the Project's Architect."

PART 5. COMPONENTS CONTRACT

Page 5-3, Paragraph 7 is amended by deleting the second sentence thereof.

PART 6. GENERAL CONDITIONS

Page 6-3, in paragraph 7, INSURANCE - GENERAL REQUIREMENTS, the words

"nor shall the component contractor allow any subcontractor to commence work on his subcontract until similar insurance required of the subcontractor has also been obtained and approved"

are deleted. The reason for this deletion is that the subcontractor will not be in a contractual relationship with the school district. The district must be satisfied as to the component contractor's insurance, but it seems clear that component contractors should take the responsibility for satisfying themselves that their subcontractors carry proper insurance.

Page 6-4, in paragraph 10, FIRE INSURANCE, in the second line of the first paragraph, insert after the words "fire insurance":

"(including extended coverage against wind storm damage and vandalism)".

Delete the second, third and fourth paragraphs and insert the following:

"Upon written request, the Component Contractor shall be named jointly under all such policies of fire insurance, all of which shall be open to its inspection.

"If required in writing by any party in interest, the District as Trustee shall upon the occurrence of loss, give bond for the proper performance of its duties. It shall deposit any money received from insurance in an account separate from all its other funds and shall distribute it in accordance with such agreement as the parties in interest may reach, or under an award of arbitrators appointed, one by the District, another by joint action of the other parties in interest. If, after loss, no special agreement be made, replacement of damaged work shall be ordered and executed as provided for under "Changes In The Work".

"The Trustee shall have power to adjust and settle any loss with the insurers unless one of the contractors interested shall object in writing within three working days of the occurrence of loss, and thereupon arbitrators shall be chosen as above. The Trustee shall in that case make settlement with the insurers in accordance with the directions of such arbitrators, who shall also, if distribution by arbitration is required, direct such distribution.

"Risk of loss of all materials and supplies as to which insurance is required under this article and which at the time of loss is not incorporated into the project shall be borne by component contractors."

Page 6-5, in paragraph 11, DISTRICT'S RIGHT TO TERMINATE CONTRACT, the next to the last sentence of the second paragraph is amended to read as follows:

"In such event, the District may take possession of and utilize in completing the work such materials, appliances, plant, and other property belonging to the Component Contractor as may be on the site of the work and necessary therefor, but the Component Contractor shall not be liable for any negligence of the District in using such materials, appliances, plant or other property of the Component Contractor."

Page 6-7, in paragraph 18, PROGRESS PAYMENTS, delete subparagraph A and reletter subparagraphs "B" and "C" as "A" and "B" respectively.

Page 6-8, in paragraph 18, PROGRESS PAYMENTS, the last part of the incomplete sentence at the top of the page is revised to read:

". . . no liens or stop notices shall be outstanding against said work or the property whereon it was done."

Page 6-8, in paragraph 19, ACCEPTANCE AND FINAL PAYMENT, the last clause of the paragraph is revised to read:

". . . and no liens or stop notices shall be outstanding against said work or the property whereon it was done and that final inspection and acceptance has been given by the Division of Architecture."

Page 6-10, in paragraph 23, FAULTY LABOR AND MATERIALS, delete the period at the end of the last sentence and add the following:

". . . , whose decision shall be subject to revision by arbitration in accordance with the rules of the American Institute of Architects."

Page 6-10, in paragraph 25, GUARANTEES, the first sentence of subparagraph A is revised to read:

"Guarantee all work for one year from the date the project is accepted by the owner or used for school purposes."

Bidders are advised that the provisions of subparagraph B which extend the guarantee for one year from date of completion of replacement or repair work are limited to those parts of the work actually replaced.

Page 6-10, in paragraph 26, DECISIONS, add at the end of the first paragraph:

"subject, however, to arbitration in accordance with the rules of the American Institute of Architects."

The second paragraph is deleted.

Page 6-13, in paragraph 36, COORDINATION WITH AND INSPECTION OF THE WORK OF OTHER CONTRACTORS, delete the period at the end of the first paragraph on page 6-14 and add the following:

", and except those defects which he, not being an expert in the other's trade, could not reasonably be expected to discover."

Page 6-14, in paragraph 39, QUALITY OF MATERIALS, the third sentence of the first paragraph is revised to read:

"The General Contractor may withhold from any certificate of payment to the Architect an amount sufficient to cover the value of defective materials or work and the cost of their removal and replacement."

The second sentence of the second paragraph is deleted.

Page 6-18, paragraph 50, REMOVAL OF RUBBISH, CLEANING, etc., delete the period at the end of this paragraph and add:

", but he shall be responsible for the cost of such repair or replacement only if it is occasioned by his own workmen."

Page 6-18, paragraph 52, TOOLS, APPLIANCES, SCAFFOLDING, etc., the next to the last sentence of the second paragraph is revised to read:

"The Component Contractor shall allow the use of said scaffolding to the other contractors on the job, but shall have the right at any time to change it, inspect it or remove it if, in his judgment, it is faulty."

Page 6-18, paragraph 54, PROTECTION OF WORK, delete the words "any possible" from the second line.

Page 6-19, paragraph 56, QUALITY OF LABOR, the second sentence is deleted.

Page 6-19, paragraph 58, TIME FOR COMPLETION AND LIQUIDATED DAMAGES, delete the period at the end of the first full paragraph on page 6-20 and add the following:

", subject, however, to revision by arbitration in accordance with the rules of the American Institute of Architects."

Page 6-20, paragraph 59, DELAYS AND EXTENSION OF TIME (as heretofore amended by Addendum No.3), add:

"subject to revision by arbitration in accordance with the rules of the American Institute of Architects."

Page 6-16, paragraph 42 is amended to read as follows:

"PART 7. ROYALTIES AND PATENTS:

The Component Contractor shall pay for all licenses and royalties necessary for the legal use and operation of any of the equipment or specialties used in the work. Payment of any such licenses or royalties, and permits for the use of any patented devices, shall be evidenced to the Architect on completion of the work. The Component Contractor shall assume all responsibility for the use of apparatus or devices covered by patents, shall defend any suits brought about by claimed infringement thereof, and shall hold the District and the Architect free from claims for damages incident to their use "

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

November 27, 1963

ADDENDUM NO. 7

The following revisions supersede the information contained in CONTRACT DOCUMENTS AND PERFORMANCE SPECIFICATIONS dated July, 1963 and shall become a part thereof.

PART 7. PERFORMANCE SPECIFICATIONS

Page 79-34, VI. DEMOUNTABLE AND FIXED PARTITIONS 152,000 LINEAL FEET, under " % Use",

Change 12'-0" standard from 8% to 8-1/2%

Change 10'-0" standard from 27% to 28-1/2%

Change TOTAL SOLID from 88% to 90%

Page 79-37, VIII. JOINTS, for Joint Type #1,

Change 50% to 60%

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SPECIAL NOTE:

1. Bidders are reminded that the lump sum bid figure must include an escalation of 6%. The total bid price and the unit prices which come later will be adjusted for actual performance of the ENR Building Index between December, 1963 and the month prior to that in which the District receives bids for the general contract. If the ENR Building Index has risen only 4% in the period described, then the prices actually charged on that school will be 2% lower than those of the bid.

FIRST CALIFORNIA COMMISSION ON SCHOOL CONSTRUCTION SYSTEMS

November 29, 1963

ADDENDUM NO. 8

INTERPRETATIONS

1. Please refer to page 1-7 of the Contract Documents. In the section entitled PROPERTY RIGHTS IN SYSTEM, the phrase "property rights in the building system as such" refers only to the methods of combining the components and to the description of the total system. There is no intent to restrict the use by component contractors of the patent rights, technical information, know-how, and engineering data, including drawings and specifications and the like relating to the products of the component contractors, or to transfer ownership or rights in the same to the Board of Trustees.

2. As a point of clarification, the square footage in the structural category, for bidding purposes, is as follows:

42,000	square feet of Floor construction.
1,358,000	square feet of Roof structure.
1,400,000	square feet of roofing, insulation, and flashing.

   The above clarification is made because the specifications call for more roofing, insulation and flashing than roof structure.

3. The second amendment to the Agreement between the member School Districts has now been officially approved by all Districts.